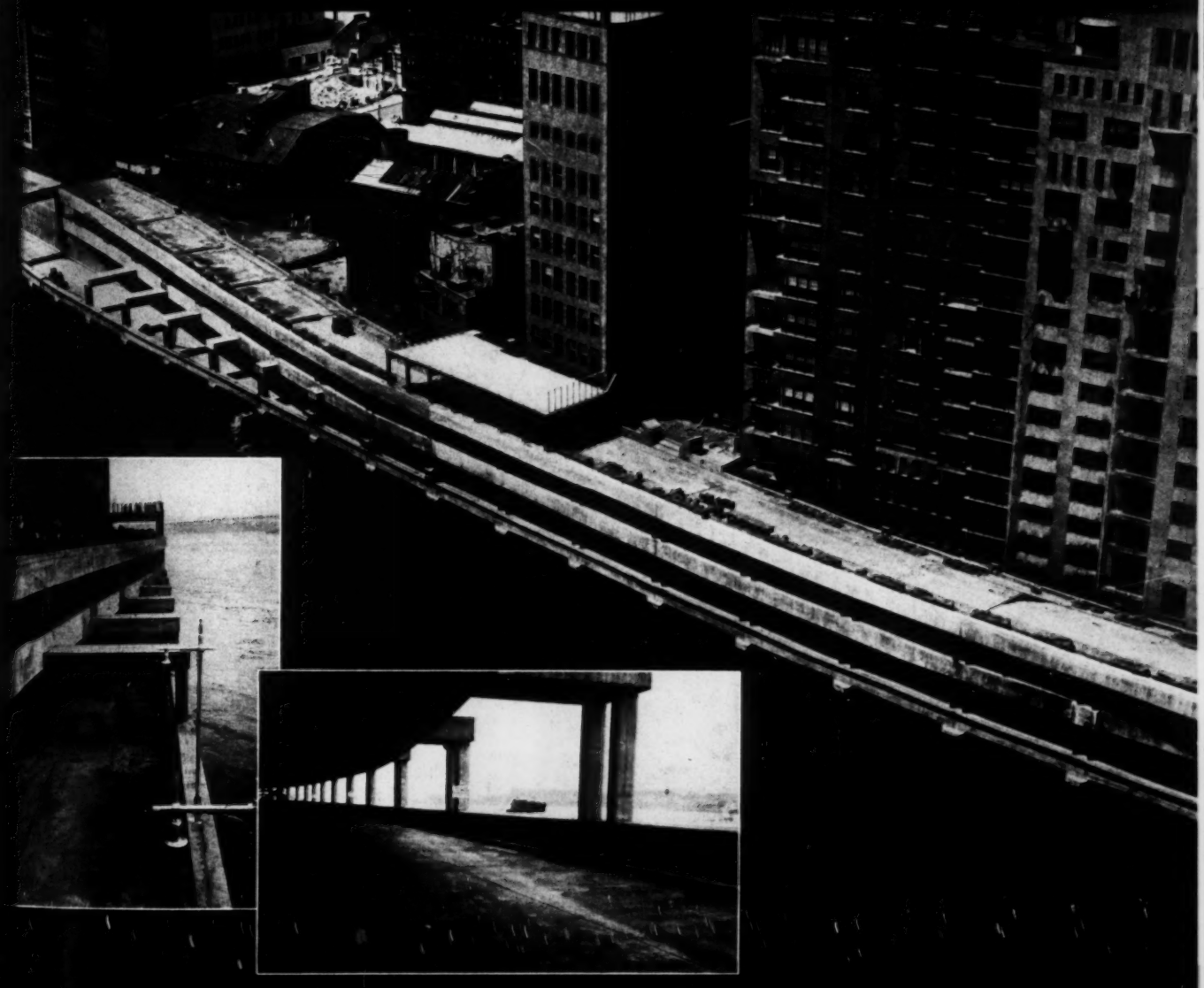
ENGINEERING NEWS-RECORD



New York City Opens East River Drive. *See page 3*

6,100 Union Pacific Box Cars

Take

YOLOY REDUCING TREATMENT

. . . Lose 6,030,800 Pounds for Life!

● Yoloy high tensile steel scores another victory over dead weight. During 1937 and 1938 the Union Pacific Railroad built 1,400 box cars, and 700 automobile cars; in 1939—1,900 box cars and 100 High Speed Merchandise Cars for Passenger Train Service, and in 1940 are building 1,500 box cars and 500 automobile cars. The sides of all of these cars, supplied by The Youngstown Steel Door Company, were made of Yoloy.

Dead weight savings total 3,015 tons or approximately 911 pounds for each box car, and 1,306 pounds for each automobile car. Normal life and service of these cars has been increased due to the high corrosion resistance of Yoloy—4 to 6 times greater than the carbon steels.

Yoloy was developed by Youngstown to provide increased strength with lighter weight. Yoloy can be welded by the arc, resistance or gas processes; has excellent corrosion fatigue properties, also greatly increased impact resistance over previously used materials.

Similar savings can be effected with all types of transportation equipment resulting in greater profits for operators.

Yoloy High Tensile Steel is available in sheets, strips, plates, bars, shapes, manufacturer's wire, welding wire, seamless pipe, and electric weld pipe.

3-9C

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon and Alloy Steels

General Offices — YOUNGSTOWN, OHIO

ENGINEERING NEWS-RECORD

NEWS

Volume 124 June 27, 1940 Number 26

NOTES ON THE NEWS

Quick Surveys of Construction Events

▶ Construction of new power stations as part of the national defense program appears highly probable. The National Defense Council has asked for funds to add 300,000 kw to the TVA system and the Administration has given the go-ahead signal to private water power projects that it frowned on a few months ago.

▶ Long range planning for military needs are now before Congress. They call for large expenditures for shipyards, drydocks, and plants for manufacture of armament and munitions.

▶ Congress took time off from military matters to right an old wrong. Over the President's veto it passed a bill relieving railroads of most of the cost of altering their bridges when waterways are enlarged.

▶ First year's operation of the Merritt Parkway in Connecticut as a toll road returned $487,000 in revenues. Nearly 5,000,000 automobile drivers (trucks not allowed) elected to pay the 10c toll to avoid congestion and stop lights on the parallel Boston Post Road.

▶ California structural engineers take just pride in the way in which schools built under their rules for earthquake resistent construction came through the recent earthquake in the Imperial Valley. They were unharmed while others were badly damaged.

▶ The Senate has cut the total of Federal funds in Highway Bill below the House figure but has increased the money for the main Federal-aid system. Preference is to be given to roads that serve national defense. Bridges are expected to receive special attention.

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Cover Photo by McLaughlin Air Service

Large Additions to TVA Power Asked by National Defense Council

Construction of a high dam on the Holston River, a large steam station and new generators in existing plants required

The Council of National Defense asked the President on June 20 to place before Congress the need for adding 300,000 kw. to the power capacity of the plants of the Tennessee Valley Authority. The proposed work would include: construction of Cherokee Dam on the Holston River with a power capacity of 90.000 kw.; construction, at a site not yet determined, of a modern steam plant with a capacity of 120,000

(*Continued on p. 10*)

NEW ENGINEERING DEAN AT UNIVERSITY OF TENNESSEE

N. W. Dougherty, since September of last year assistant dean of engineering at the University of Tennessee, begins new duties July 1 as dean of the engineering college, succeeding C. E. Ferris, who is retiring to become dean emeritus and head of the new industrial engineering department. Following his education at the University of Tennessee and Cornell University, Dougherty was instructor in civil engineering at the latter school from 1910 to 1914. His next teaching position was assistant professor of civil engineering at George Washington University; after two years he left to go to the University of Tennessee as associate professor of civil engineering.

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Defense Expansion Plans Grow Larger

Great shipbuilding program now proposed as are government-built munition plants

Defense legislation now enters a second phase. Three appropriation bills have provided money to expand the Army to 400,000 men, to buy critical material for a small drafted army, and to expand the Navy to its authorized strength.

Now begins a group of bills aimed at long-range military expansion. Already in the works is a bill providing for a 70 per cent expansion, over the next five to seven years, of our authorized naval strength—more than doubling the fleet now afloat. First move under this program will be large-scale construction of shipbuilding facilities at a cost of $150,000,000, since present yards are close to capacity. It would also provide $20,000,000 for expansion of facilities for armor plate manufacture and $50,000,000 for added facilities for construction of guns.

Still in preparation is a corresponding bill for Army expansion. This is expected to revolve around a quick start on the billion dollars worth of plant construction for armament.

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WASHINGTON HIGHLIGHTS

Special reports by Paul Wooton

CONGRESS has over-ruled the President's veto of a bill changing the allocation of costs of bridges altered in the interests of navigation. Formerly all costs were born by the owner of the bridge, but under the bill which now becomes law the bridge-owner will bear only those costs chargeable to benefits of the owner, the remainder being borne by the United States.

THE MUNICIPAL BANKRUPTCY LAW, due to expire June 30, has been extended by Congress for two years and its application broadened to cover counties and parishes.

A PRESIDENTIAL REQUEST for $8,127,000 to start immediately a number of river and harbor projects "primarily and urgently required in the interests of the national defense" was approved by the Senate last week but stricken out by the conference committee on the supplemental defense appropriation. Biggest item the President wanted was a $4,250,000 project to deepen the present 35-ft. channel of the Delaware River to 40 ft. between the Philadelphia Navy Yard and the sea.

STUDIES of low cost housing materials by the Bureau of Standards, for which no money was appropriated for next year will be continued; Congress has approved transfer of $50,000 each from the FHA, HOLC, and USHA.

Civil service requirements have been eliminated as regards civilian War Department employees working on the $160,000,000 army post construction program.

CONGRESS may not have feet of clay, but it's long been known to have a shaky roof; a half million has finally been appropriated to reconstruct roofs of the Senate and House wings of the Capitol.

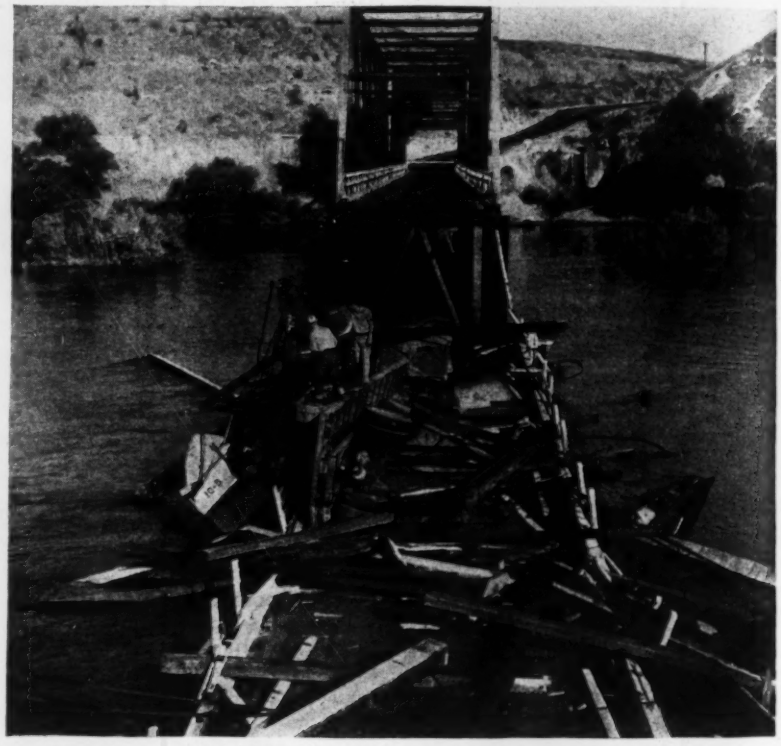
THE DEADLINE on PWA projects, originally set at June 30, 1940, has been extended a year.

Well-Built Schools Not Harmed by Western Quake

The value of earthquake resistant design is emphasized by the condition of schools in the Imperial Valley area that was visited by earthquake last month (*ENR* May 23 and May 30). The following is taken from a report by D. C. Willett, supervising structural engineer, California Division of Architecture.

Although the Imperial Valley earthquake was the 28th destructive shock to occur in California in the last century, it was not until 1933 that laws were passed (the Field and Riley Acts) requiring earthquake resistant provisions in the design of all public school buildings. What this legislation has accomplished in safeguarding school children is apparent from the conditions of Imperial Valley schools after the earthquake.

The school buildings erected before



ANOTHER OLD BRIDGE GIVES UP

AS IF to emphasize the often repeated statement that the principal national defense deficiency in our highways rests in old and inadequate bridges, the center span of a 51-yr. old bridge across the San Joaquin River 11 mi. north of Fresno, Calif., failed June 15 under a heavily loaded truck towing a trailer loaded with a power shovel. The bridge, made up of five timber trusses of 160-ft. span, had been posted for some time at 8 tons. The collapse of the central span dropped truck and trailer into the river and caused damage in other parts of the structure.

Because of the age of the bridge and three previous occasions on which damage had occurred, plans for construction of a new bridge had already been prepared.

1933 were, without exception, seriously damaged. Some were shattered beyond economic repair; chimneys came through ceilings, carrying with them portions of the roof; entire ceilings dropped, gables were shaken loose and brick or concrete walls were shattered. California again was fortunate in that this quake did not occur during school hours.

In contrast with this extensive destruction of old school buildings, Willett said, "not a single one of the 15 new school buildings built in the Imperial Valley under the jurisdiction of the Division of Architecture, or since the 1933 requirements were imposed, was damaged in any way, not even to minor cracking of the plaster."

As to the additional cost of making schools earthquake resistant at the time of construction, the Division of Architecture reports that in some 3,300 schools projects costing more than $140,000,000, built under the 1933 laws, earthquake resistant provisions have added less than 2 per cent to the total building cost. It is to be remembered that this 2 per cent is spent in strengthening the structural portion of the building which represents 1/5 to 1/3 the total building cost.

Reorganization Plan of Sewage Works Federation Is Outlined

Increase in membership dues will provide for full-time executive secretary, monthly publication of *Journal* and enlarged committee activities

Plans for the strengthening of the Federation of Sewage Works Associations to give national voice and unity to existing local associations will be presented at the first annual convention of the Federation in Chicago on Oct. 3-5. A committee for expansion and reorganization headed by Charles A. Emerson, consulting engineer, New York, will make recommendations to representatives of the 25 local associations.

Conflicting rumors have been prevalent concerning the revitalization plan of the Federation which came into being 12 years ago to coordinate the interests of local sewage works groups. Because of these misunderstandings the committee has made the following statement concerning the aims of the present movement.

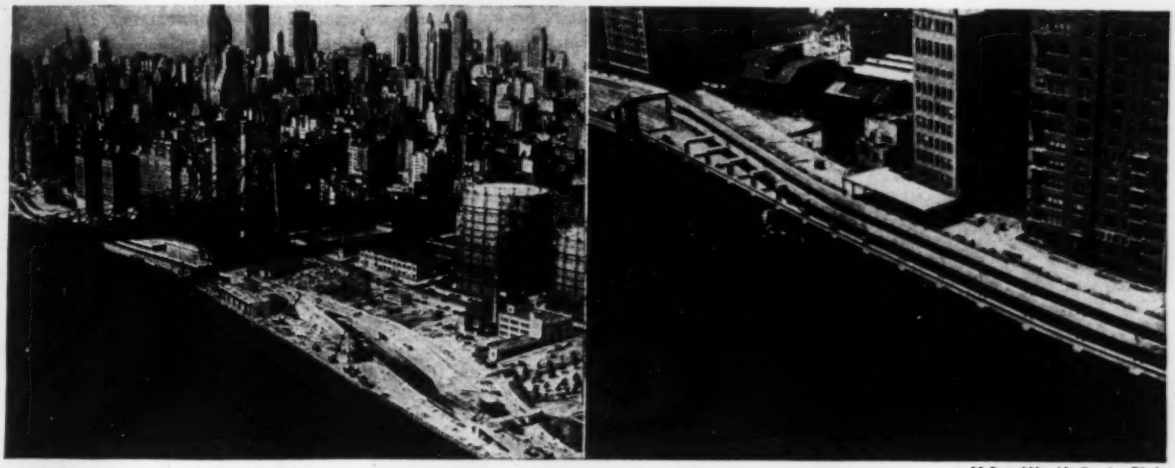
First, it is planned to establish a strong, central executive office with a full-time secretary and stenographer. Principal duties of the executive secretary will be to procure advertising for the *Journal*, maintain close contact with member associations and in all other respects to put the business end of the Federation on a par with that of other national professional associations.

Committee work broadened

Committee work will be broadened in scope and strengthened, particularly with respect to the establishment of uniform standards of procedure for plant design and operation. It is also proposed that the publication of the *Sewage Works Journal* be changed from a bi-monthly to a monthly basis.

Funds to finance the expanded work

(Continued on page 4)



McLaughlin Air Service Photos

NEW YORK OPENS A NEW SECTION OF THE EAST RIVER DRIVE

A NEW HIGHWAY providing for three lanes of traffic each way along the Manhattan side of the East River was opened to traffic in New York City June 18. Known as the East River Drive, it is designed eventually to be a non-stop highway from the Battery at the lower tip of Manhattan to the Triborough Bridge, a distance of nine miles. The sections from Montgomery St. to 30th St. and from 49th to 93rd Sts. have been completed; money is available for constructing the section from 30th to 49th Sts., and this work will start at an early date; the section from 92nd St. to the Triborough Bridge has been in service for some years, and the 1½ mile link below Montgomery St. is in the preliminary design stage (*ENR*, May 9, 1940, p. 640).

Outstanding feature of design is the accommodation on a restricted right-of-way at two points for the six lanes of traffic. As shown by the right view above this was accomplished in the 81st to 84th section by use of a multiple deck drive, the southbound traffic being carried over the northbound. The left-hand view shows similar construction required beneath the Queensboro Bridge.

The work, which will require $32,000,000 for construction alone when complete, was under jurisdiction of the office of Stanley M. Isaacs, president of the Borough of Manhattan. It was done by the Department of Borough Works of which Walter D. Binger is commissioner; Lester C. Hammond, chief engineer; J. C. Collyer, design engineer; Pincus Rizack, engineer in charge of construction on the 49th to 92nd St. section; and J. E. L. Ryan, of the Montgomery to 30th st. section.

Stream Pollution Compacts Approved

Congress favors agreements to control pollution of Ohio and Potomac rivers

Consent of Congress would be given to interstate compacts for control of pollution in the Ohio and Potomac Rivers under two Senate-approved bills which were favorably reported last week by the House rivers and harbors committee. One bill would permit Maryland, Virginia, West Virginia, Pennsylvania, and the District of Columbia to set up by compact a Potomac Valley Conservancy District to be administered by an interstate commission. The commission would have power to make studies of the river and recommend to the states minimum standards of cleanliness. The compact has been ratified by all the states involved except Pennsylvania and West Virginia.

The other bill would give Congressional approval to the Ohio Valley Water Sanitation Compact (*ENR*, March 9, 1939, p. 1939), which has been signed by New York, Illinois, Kentucky, Indiana, Ohio, and West Virginia, and awaits ratification by Pennsylvania and Tennessee.

Early passage of the bills is expected.

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Sewage Works Federation

(Continued from p. 3)

of the Federation are to be provided by increasing the dues for full members to $3.50 per year and for operator members to $2.50 per year.

The president and vice president of the Federation are to be selected from the entire membership of the local associations, not as at present from the Federation's board of directors.

The committee carefully pointed out that the reorganization plan does not envisage any combination whatsoever with any other technical association.

Action on these proposals will be taken at the first annual convention of the Federation which is to be held in conjunction with a meeting of the Central States Sewage Works Association in Chicago on Oct. 3-5.

The general convention committee is headed by G. J. Schroepfer, chief engineer of the Minnesota-St. Paul Sanitary District, and includes Morris Cohn, Schenectady; F. W. Gilcreas, Albany; F. W. Mohlman, Chicago; W. J. Orchard, Newark, and B. A. Poole, Indianapolis. Poole is the president of the Central States Sewage Works Association.

Defense Priorities Included In Federal-Aid Highway Bill

Senate version would require PRA to favor roads recommended by Army or Navy

Defense highway priorities were written into the federal-aid highway bill by the Senate last week; the bill is now in conference. As predicted (*ENR*, June 6, 1940, p. 771), the provision would require the Public Roads Administration to give priority, in approving state highway projects, to roads recommended by the Army or Navy. This, it is believed, is likely to mean an increased emphasis on bridge projects as compared with paving.

Federal funds could be used, under another Senate amendment, for engineering costs on projects ordered by the Federal Works Administrator at the request of Army or Navy.

Committee elimination of provision for RFC loans to states for right-of-way acquisition was upheld on the Senate floor, and the matter will have to be decided in conference. Since the chief Senate objection was to the clause permitting pledging of federal-aid payments as security for such loans, it is thought the conference compromise may retain the loan authorization while eliminating the pledging feature. RFC probably already has the power to make such loans, so the total effect of such a compromise would be an expression of Congressional advice to the RFC.

The Senate also provided that no bridge be built with federal-aid money within ten miles of an existing toll bridge unless a fair offer is made to buy the bridge.

At the request of Senator O'Mahoney of Wyoming, a clause was inserted providing that a state which has eliminated substantially all its grade crossings may use its allotment of grade crossing money for secondary roads. Wyoming still has about 50 grade crossings, but most of these are in cities and the state highway department would like to convince PRA that this constitutes substantial elimination. It is thought unlikely that this attempt will succeed.

Minor changes would require that states taking advantage of the "Arkansas clause" (permitting use of federal money without matching where all highway revenues are insufficient for the purpose) must collect gas taxes equal to the national average; would permit reapportionment of federal-aid money withheld because of gas tax diversion; and would allow states to keep for another year unused secondary road money which would normally have to be surrendered June 30, 1940.

As the bill goes to conference, the amounts authorized for fiscal 1942 and 1943 compared to those for the fiscal years just beginning are as follows:

Item	Fiscal Years 1942–43 Senate	House	Funds Allocated for Fiscal Year 1941
Regular federal aid	$100,000,000	$93,750,000	$115,000,000
Secondary roads	15,000,000	18,750,000	15,000,000
Grade crossing elimination	20,000,000	37,500,000	30,000,000
Forest highways	7,000,000	10,500,000	13,000,000
Public land roads	1,500,000	1,875,000	2,000,000
Park roads and trails	4,000,000	5,625,000	5,000,000
Parkways	7,500,000	7,500,000	8,000,000
Indian roads	2,500,000	3,000,000	3,000,000
	$157,500,000	$178,500,000	$191,000,000

Detroit Incinerator Held Nuisance; Must Close

A circuit court in Detroit June 13 ruled that the $380,000 Northwest incinerator plant must be closed within 30 days because of being a neighborhood nuisance. The ruling, in favor of the Northwest Home Owners Association, not only prohibits the use of the Davison Avenue site for an incinerator plant but it also makes it illegal for the city to even use the site for a garbage transfer station.

The decision is the outcome of a long controversy over the Northwest plant and alleged nuisances occasioned by the operation of new incinerators in Detroit (see *ENR* Apr. 20, 1939, p. 529; Oct. 20 1938, p. 477; and Nov. 10, 1938, p. 573). If upheld by the higher courts—an immediate appeal to the Michigan State Supreme Court being planned—the ruling will necessitate the wrecking of the Northwest plant. The incinerator, built by Wayne County and financed by a county bond issue, is rented to the city of Detroit.

C. S. Hill, Veteran Editor, Retires from News-Record

On July 1, Charles S. Hill, associate editor of *Engineering News-Record*, will retire from the staff to devote his time to personal pursuits. It was 52 years ago this summer that Hill, having just graduated from the University of Vermont, joined the staff of the old *Engineering News*. At no time during the

Harris & Ewing

CHARLES S. HILL

ensuing half century did he desert engineering journalism, but 12 years of the period were spent on papers other than those that were combined to form *Engineering News-Record;* from 1906 to 1916 he was editor of *Engineering and Contracting*, in Chicago, and from 1916 to 1918 he edited *The Contractor* there. When this latter paper was absorbed by *Engineering News-Record*, Hill returned with it.

Well known to countless readers of this journal for his activities in the highway and heavy construction field, "Judge" Hill, as he affectionately came to be known, has not only witnessed but played an active part in the development of this country from a predominantly agricultural nation to its present industrial status, a development that is the handiwork of the civil engineers and contractors whose accomplishments he recorded and analyzed for so long.

In the early '90s it was Hill's lot to write a series of articles on the Chicago Drainage Canal, where mechanized earthmoving had its birth. These articles, which virtually took apart the unique machines that were used, had an important effect in educating the industry on the possibilities and procedures of mechanized construction. Many a contractor who bid on the Panama Canal a decade later had these articles in one hand and a set of specifications in the other. The Panama Canal work became the subject of another series of articles by Hill, which comprise the most complete published account of this historic undertaking. In later years his writings on Mississippi levee work, on winter construction, and on highway matters have been equally influential.

In 1904 Hill published one of the first books on the then infant science of reinforced concrete. "Concrete Construction" followed in 1908, and "Concrete Inspection" in 1909. In 1928 his book on "Winter Construction" appeared.

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Distributors, Manufacturers Seek Better Relations

In the three-day semi-annual meeting of the Associated Equipment Distributors, held in Chicago June 17-19, much discussion was devoted to improvement of relations between distributors and manufacturers of construction equipment. Some of the sessions were addressed by representatives of manufacturers.

Direct selling to tne government was deplored by both groups. Fred Copeland, president of the Sullivan Machinery Co., said "Government buying has debauched everything," and Stanley H. Hunter, American Hoist & Derrick Co., pointed out that the scramble of price cutting on the part of manufacturers to sell to federal agencies was opening the eyes of the contractors. In general, however, manufacturers defended the evil of direct and low-price selling to the government as "dictated by competition."

The value of local distributor groups was discussed from both sides. There are 33 local groups in the association, and some ten more are in the process of formation. Distributors in favor of local organizations pointed out how they help to stabilize selling, trade-in and renting practices in the various localities. Manufacturers favor such groups unless "they become pressure organizations, demanding the manufacturers contribute to local expenses and to local advertising."

R. R. Nixon, Chattanooga, Tenn., president of the association, presided.

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First All Year Road For Utah Town

Last week the first year-round road to the town of Boulder, Utah, one of the last communities in the United States to receive its mail by pack mule, was officially opened. The highway was built as a CCC project and is 75 miles in length, extending from Escalante to Boulder. The road in some places required 40-ft. cuts through solid rock.

Relief Bill Passes With Senate Changes

Cost limit of $100,000 for buildings other than defense structures retained

As finally passed, the relief bill conforms in most respects to the Senate version (*ENR*, June 20, 1940, p. 49). The $100,000 cost limit on buildings other than defense structures is retained, except that an exception is made in favor of projects for which a state legislature had made an appropriation before May 15, 1940.

The requirement that project workers be discharged after 18 months was restored to the bill in conference, with the present exemption for family heads over 45 years old stricken out. The bill also reduces funds for administrative expenditures.

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Merritt Parkway Tolls $487,000 in First Year

Last Friday morning, June 21, at 8 a.m., marked the completion of the first year of toll operation on the Merritt Parkway in Connecticut. During that period 4,892,500 vehicles passed through the toll booths, or 98 per cent of the 5,000,000 that had been estimated.

The high month was July, 1939, with 594,000 cars; the low month February, 1940, with 211,000 cars. Labor Day, Sept. 4, produced the highest daily total with 39,855 cars, while the daily low occurred on February 15, following the St. Valentine's Day blizzard, when only 1,288 cars passed the toll station at Greenwich. The peak hour for both directions was 3,181 cars and for one direction only was 2,044 cars. The eastbound and westbound traffic for the entire year was very nearly evenly divided.

The gross income from the tolls at 10c. per vehicle was about $487,000, and the operating expenses for the same period were $52,000, or about 10 per cent of the gross income. The revenues derived from tolls on the Merritt Parkway will be used exclusively to construct the Wilbur Cross Parkway to Hartford from the end of the Merritt Parkway at the Housatonic River. The new bridge at this point, to be opened within the next few weeks, will add another toll station whose revenues will also be used for the Wilbur Cross Parkway.

These statistics were obtained from William G. Grove, associate highway engineer of the Connecticut highway department, who was in charge of organizing the tolls on the Merritt Parkway in 1939.

Their job dedicated last week. **Walter D. Binger,** left, Commissioner of Borough Works, New York, and **Pincus Rizack,** engineer in charge of construction for the city on the 49th to 92nd Street section of the East River Drive, are shown at the opening of the thoroughfare June 18. Constructed by the Borough of Manhattan with a PWA grant, the drive extends from Montgomery to 125th St. When completed, $32,000,000 will have been spent for construction alone.

As resident engineer on the Lake Shore pumping station of the new Lake Michigan water supply for Grand Rapids, **Lester Nelson** is spending plenty of time in a diving suit directing the laying of a mile of 54-in. intake pipeline and inspecting the joints "on the ground," which means in a 10-ft. trench at the bottom of the lake. Nelson belongs to the staff of Consoer, Townsend & Quinlan, Chicago, consultants for the project, but is paid by the city.

Joseph Kalill, left, contractor on the tunnel under the Maumee River for the new $9,000,000 Lake Erie water supply for Toledo, Ohio, and **Paul R. McNutt,** assistant engineer, Toledo water department, are shown looking over the tunnel line, which consists of a 72-in. steel pipe concreted into a rock bore 110 ft. below the surface. The Toledo project, besides the intake, includes a 12-mi. pipeline, mostly 6 ft. in diameter, a filtration plant and two pumping stations.

MEN AT WORK

Tunnels on the Penn Turnpike are still on a tight construction schedule but **R. M. Merriman,** chief tunnel engineer for the Pennsylvania Turnpike Commission, expects to achieve substantial completion of that work this month. Seven tunnels, ranging in length from 3,511 ft. for the Rays Hill Tunnel to 6,782 ft. for the Sideling Hill tunnel, form seven miles of the 160-mi. express highway leading from Harrisburg to Pittsburgh.

The governor of Oklahoma was unable to stop their job. **John Dunkin Forsyth,** right, of Tulsa, Okla., an architect whose office is responsible for the architectural treatment of Pensacola Dam, and **W. R. Holway,** of **Holway & Neuffer, Tulsa, consultants** for the work, get together on the job, a PWA hydro project. The governor tried unsuccessfully to have PWA increase its contribution to rebuilding flooded-out roads.

The men responsible for the construction and operation of a new sewage treatment works for the town of Killdeer, N. D. **R. F. Mirick,** left, construction engineer and supervisor for the Work Projects Administration, was superintendent on the job during construction of the plant. **T. E. Bergrud** of Killdeer has been placed in charge of operation of the work. They are shown at the entrance of the lift station adjacent to the Imhoff tank.

MEN AND JOBS

EDWARDO J. CHIBAS, president of the recently organized Cuban Section of the American Water Works Association, was awarded the degree of doctor of engineering by Rensselaer Polytechnic Institute on June 17. Chibas, who graduated from Rensselaer in 1889, has been active as a consulting engineer in Cuba and South America, and he was formerly president of the Cuban Society of Engineers.

JOHN MCCRADY, civil engineer of Charleston, S. C., has been named one of five members of the Charleston Naval Base Authority, created to handle any arrangements necessary for aiding in establishment of a naval base in Charleston harbor. The authority will also handle the construction of a new naval reserve armory.

F. C. HURST, building inspector of Phoenix, Ariz., has been made head of the consolidated building, electrical and plumbing department of that city.

COL. BEVERLY C. DUNN, commander of the Sixth Engineering Battalion, Fort Lawton, Wash., is to replace Maj. Peter E. Bermel as district engineer for the U. S. Engineers at Honolulu, effective late in July. Maj. Bermel has been district engineer at Honolulu since November 1937.

EDWARD W. STEARNS, former assistant chief engineer of the Port of New York Authority, has been appointed chief engineer of the P. T. Cox Construction Co. of New York City. Stearns, a graduate of the University of Wisconsin, was associated with the Port Authority during its big bridge building period and prior to that had extensive experience with construction organizations and steel fabricating companies.

K. K. KAHLER is the new WPA supervisor for Clark County, Ark.

HERBERT HANSON of Nampa, Idaho, has been named assistant to JAMES MCMENEMY, who recently began duties as city engineer for Nampa.

L. E. CLARK has been appointed city engineer of Beaver City, Neb.

CAPT. G. E. TEXTOR has begun new duties at the Denison Dam project as assistant to the district engineer. Capt. Textor has recently been with the 21st Army Engineers at Fort Benning, Ga.

MAURICE BOURGET, civil engineer, is the newly elected Liberal member of the Canadian Parliament for Levis, Que. Bourget received his engineering education at the Ecole Polytechnique of Montreal, receiving a civil engineering degree in 1932. From 1933 until 1937 he was with the department of public works of the Province of Quebec as assistant engineer. In the Fall of 1937 he joined the engineering staff of Zachee Langlais, consulting engineer of Quebec City.

JULIAN MONTGOMERY, state highway engineer of Texas, has been granted a leave of absence by the Texas State Highway Commission to recuperate from a recent illness. T. H. WEBB, assistant state highway engineer, will be acting state highway engineer during Montgomery's absence.

S. M. CONNOLLY, town engineer of Pamour, Ont., has resigned to accept a commission in the Canadian Active Service Force as assistant camp lieutenant at Camp Borden, Ont.

E. L. BALL, civil engineer, recently began new duties with the Robert Simpson Eastern Limited at Halifax, N. S. Ball was graduated in civil engineering from Nova Scotia Technical College at Halifax in 1938, soon afterwards joining the Engineering Service Company. In September 1939 he became a member of the engineering department of The Imperial Oil Co.

CLAYTON SCHULLE has begun new duties as city engineer of Tracy, Minn., the first full-time city engineer employed by that municipality.

S. C. HAMILTON is being transferred by the Chicago Bridge & Iron Co. from Birmingham to Houston, Tex. where a new erection division office has been opened to supervise field work in the southwest. W. T. HUDSON, assisted by DAN O'LAURIE, will be in charge of the erection office in Houston. The personnel of the Dallas office is also being increased by the transfer of R. A. WILLIAMS from Chicago.

JOHN MORROW, former project engineer of the Michigan State Highway Department, has been appointed as construction engineer in charge of survey and design for the Bay County (Mich.) Road Commission.

CECIL E. PEARCE, principal design engineer of the TVA design department, has joined the U. S. Engineers office at Denison, Tex., where he expects to remain for eight or nine months working on power-plant design before returning to the TVA. Pearce, who received a civil engineering degree from Stanford University in 1922, has worked on the Hetch-Hetchy, Don Pedro, Exchecquer, Pine Canyon, Grand Coulee and Parker dams. In 1934 he joined the TVA as hydraulic engineer and recently has been in charge of design of the Hiwassee project.

STANLEY M. MERCIER has been appointed chief engineer of the conveyor division of the Jeffrey Mfg. Co., Columbus, Ohio. Mercier, who has had a varied experience in industrial and construction engineering, design and sales, will direct all conveyor engineering and engineering sales activities.

ROGER E. TUCKER, the new city manager for Muskogee, Okla., succeeds H. A. VON UNWORTH, who resigned May 3, due to ill health.

PAUL JOHNSON, concrete engineer on the Caddoa Dam work in Colorado, has been transferred to the Panama Canal Zone where he will be in charge of extensive concrete construction for fortifications. Johnson at Caddoa Dam was in charge of the concrete laboratories, mix design, and inspection and placing of the concrete.

REED POWELL, engineer of Denver, recently accepted a position with the Colorado & Southern Ry. as field engineer in New Mexico. Powell was formerly with the Public Works Administration.

D. C. SEELEY, reclamation engineer with the Denver office is now employed on Grand Coulee Dam on field construction.

GEORGE EMERY of the firm of Atchison & Emery, Denver, has been appointed construction consultant on a $1,000,000 Denver housing project started June 1 as a U.S.H.A. project.

JAMES A. STAIRS, civil engineer, is now connected with the Dominion Engineering Works, Ltd., Lachine, Quebec. Upon graduation from the Royal Military College of Kingston, in 1897, Stairs worked for the Nova Scotia Steel & Coal Co. He also worked for the Brown Machine Co., of New Glasgow, Nova Scotia; the Imperial Munitions Board, the Ford Motor Co. at River Rouge, Mich.; and the Calorizing Co., Pittsburgh, Pa. From 1924 to 1927 he was in India with the Tata Iron & Steel Co., and from 1928 to 1932 he was with the United Engineering & Foundry Co., Pittsburgh, Pa.

More New York El's to Come Down

DEMOLITION of about 24 miles of elevated railway lines in New York City is to be undertaken in the near future, the sections to be torn down having been condemned by the city before it took over the lines of the Brooklyn-Manhattan Transit Co. and the Interborough Rapid Transit Co. on June 1 and June 12, respectively, to integrate them with the publicly owned and operated Independent Subway System.

The major elevated line to come down is the Ninth Avenue Elevated through the entire length of Manhattan Island from the 155th St. station to South Ferry. (The Sixth Avenue Elevated from its connection with the Ninth Avenue line at 53rd St. to Battery Park was taken down last year except for a short section in 53rd St. that carries power lines.)

On the east side of Manhattan, the Second Avenue Elevated from 60th St. north to its connection with the Third Avenue Elevated at the Harlem River is to come down. South of 60th St. it will be continued to carry the trains coming over the Queensboro Bridge.

In Brooklyn, the Fulton Street Elevated from the ferry near the Brooklyn Bridge out to Rockaway Ave. is to be demolished. Also coming down in Brooklyn is the Fifth Avenue line from its connection with the Myrtle Avenue line south to 36th St. Operation of this line in 3rd Ave. is to be discontinued. Another short piece to come down is a spur from the Broadway Elevated to an old ferry slip on the East River near the Williamsburg Bridge.

The Board of Transportation expects to call for bids on the demolition work in the near future.

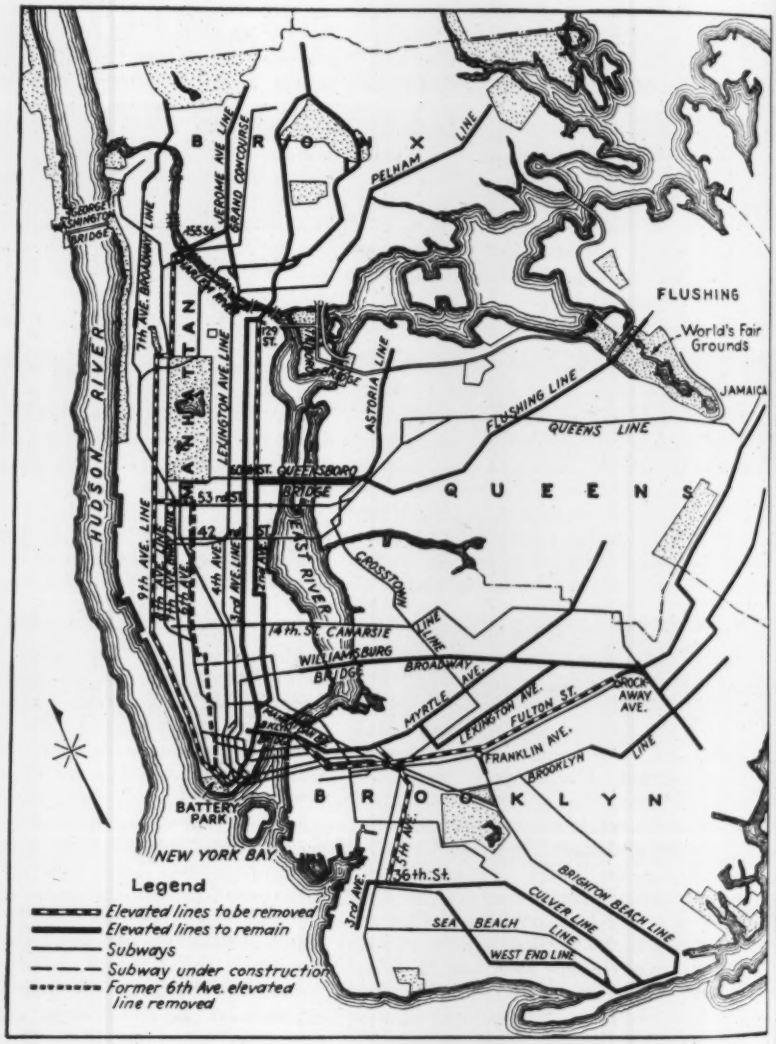
Passengers from the Jerome Avenue line for the west side of Manhattan will be given free transfers to the Independent Subway at the 155th St. station. Similarly, in Brooklyn, free transfers to the subway will be provided at the Rockaway Ave. and Franklin Ave. stations.

Construction of the first elevated railway began in 1867, but work on the present system may be said to have begun in 1871 when the New York Elevated Ry. Co. bought the short line of the bankrupt West Side Elevated Ry. Operation from the Battery north through Greenwich St. and 9th Ave. to 30th St. was begun in 1872. The Gilbert Elevated Ry. Co., which built the Sixth Avenue line, was organized in 1871 and work started in 1877. Construction of the Third Avenue Elevated began about the same time. The Second Avenue Elevated was the last to be built. It was completed in 1880 and by 1887 extensions of other parts of the system into the suburbs had been completed.

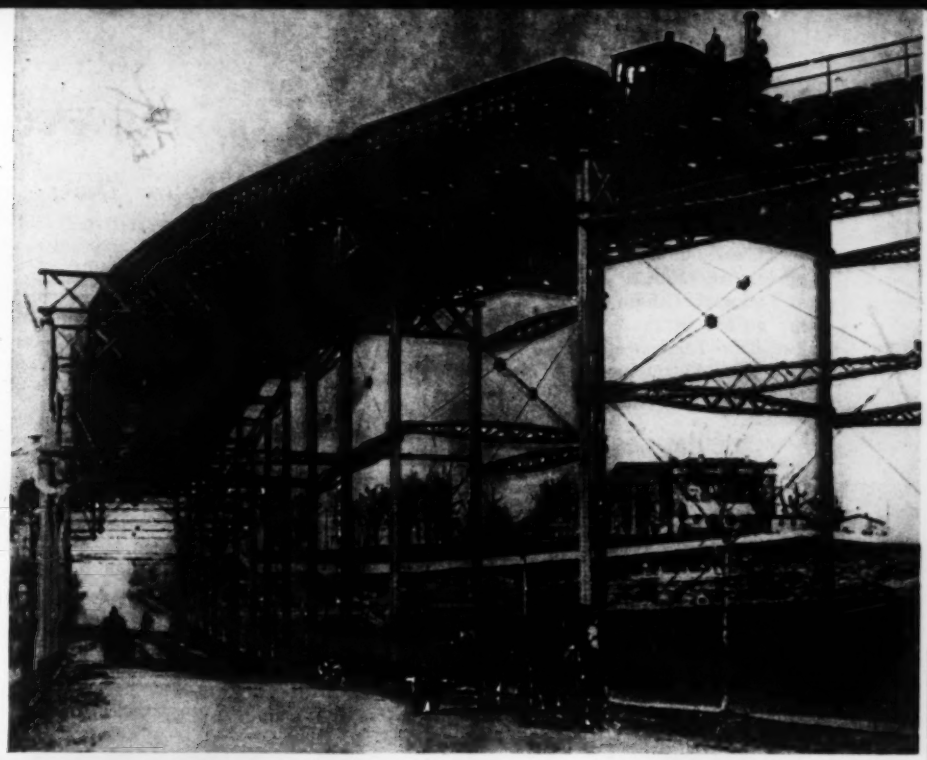
The original Ninth Avenue line was double track and was operated with 15 ton steam locomotives. In 1893, new 24 ton locomotives were bought, the structure was strengthened and a third track was added to permit the operation of express trains downtown in the morning and uptown at night. These trains operated non-stop from 116th St. to 14th St.

Electrification of the elevated railways was begun about the turn of the century and the first electric train was operated over the Second Avenue line in January 1902. Electrification of the other lines was completed a few months later.

In 1914 extensive reconstruction of the three major elevated lines on Manhattan Island was begun to reinforce them for heavier equipment and to permit adding third tracks to the Second Avenue and Third Avenue lines. Much of the downtown part of the Ninth Avenue line was rebuilt at that time and the hump express stations were added. That work was completed in 1916.



RAPID TRANSIT lines of New York City. The elevated lines have been emphasized to indicate the extent to which they still will serve as part of the system after the current demolition has been completed.

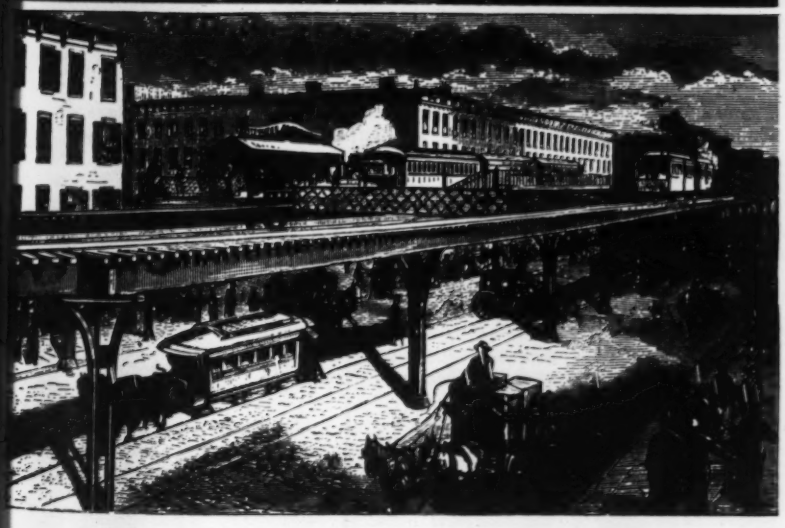


HIGH SECTION of the Ninth Avenue Elevated in 110th St. Dire consequences from derailments on the sharp curves of this high section were predicted when it was built, but no serious accidents occurred. A high structure had to be built in order to get from the summit at 104th St. down to the Harlem flats without excessive grades.

Underwood & Underwood Photo

UPPER SECTION of the Ninth Avenue line in what is now Columbus Ave. Phoenix columns carried lattice girders which were supposed to let the maximum amount of light reach the street. A third track was added in the center in 1893 and extensive strengthening was undertaken in 1914.

From Engineering News, Feb. 21, 1880



THE 42ND St. Station of the Ninth Avenue line from a sketch made soon after it was opened. Two types of construction were used in the initial construction of this line, plate girders supported on special columns, as here shown, and lattice girders supported on latticed channel columns. Farther uptown, Phoenix columns were used.

Thomas F. Healy Collection

TVA Power Asked

(Continued from p. 1)

kw.; and additional installation of generating units at Wilson Dam and at Pickwick Landing Dam to increase the output of those plants by 90,000 kw. The Tennessee Valley Authority now has 742,800 kw. in hydro-electric plants and 215,000 kw. in steam stations.

Cherokee Dam

The proposed Cherokee Dam is to be located on the Holston River 2½ miles north of Jefferson City, Tenn., approximately 33 miles from Knoxville. An excellent site for a high dam has been found at that point to replace three of the dams proposed for the control of that river in the original study made by the U. S. Engineers. The dam will consist of a concrete gravity spillway section 173 ft. high and 425 ft. long flanked by non-overflow sections and earth embankments, a total length of 6,600 ft. Two earth dikes 700 ft. long will be needed to close saddles in the south rim. About 726,000 cu.yd. of concrete and 3,000,000 cu.yd. of earth fill will be required.

The reservoir will be 45 miles long and will have a maximum width of about 3 miles and a surface area of 30,300 acres at the top of the spillway gate. It will have a storage capacity of 1,500,000 acre-ft. of which 1,200,000 acre-ft. will be for flood storage. The drainage area above the site is 3,428 sq.mi.

New steam plant

The engineers of the Tennessee Valley Authority have not determined the most feasible site for the proposed steam plant, but this is not expected to delay the preparation of designs and placing of orders for the steam and electrical equipment as the general requirements for these are not materially affected by the site requirements.

Cherokee Dam will cost $36,000,000, including the switchyard for the power plant and the other work will bring the total to $65,000,000.

E. R. Stettinius of the Defense Council asked for $25,000,000 to start construction of these projects but the Senate appropriations committee refused to put it in the Second Deficiency Bill to avoid controversy, it is believed. It is expected that money will be provided in a later bill. The request reflects both administration eagerness to bring new defense industries into the mountain-protected Tennessee Valley and fears that important industries now there may suffer shortages of power. The dry spring has raised question as to the ability of the TVA to supply secondary power for aluminum production.

Alexander Potter Dies; Sanitary Consultant

Alexander Potter, 74, consulting engineer of New York City, died June 20 in Great Barrington, Mass. Potter, who graduated with a civil engineering degree from Lehigh University in 1890, was engaged in private practice as a consultant in sanitary and hydraulic engineering, except for brief periods with the Canadian Pacific R.R. and in the office of the city engineer of Halifax, N. S.

As chief engineer for the Joint Sewerage Comm. of N. J. since inception, Potter served this organization for 44 years; in 1938 he was made consulting engineer to the commission. He also was associated as consulting engineer with the Second River Joint Sewerage Commission in New Jersey and the Westchester Joint Waterworks in Westchester County, N. Y.

During the World War, he was in charge of design and supervision of construction for the U.S. Engineers of the sanitary works for two large army cantonments and for the U.S. explosive plant at Nitro, W. Va. He had been associated with water supply projects in more than 150 cities. He also served as advisory engineer on sanitary problems for Pennsylvania coal companies.

Kaiden-Keystone Photo

ALEXANDER POTTER

JOBS OF THE WEEK

POWER PLANT, Hudsonville, Ill.

Campbell-Lowrie-Lautermilch Corp., Chicago, awarded contract for power plant for Central Illinois Public Service Co., Springfield. Estimated cost $500,000. Contract for 25,000 kw. turbo generator awarded to Allis-Chalmers Mfg. Co., Milwaukee, Wis. Sargent & Lundy, Inc., Chicago, Ill., engineers.

HANGAR 8, North Beach, N. Y.

James Stewart & Co., Inc., New York, awarded general contract, Department Docks, New York, for land plane hangar No. 8, at LaGuardia Field, $516,480. The facilities will supplement those in the existing 6 hangars.

ENGINEERING BUILDING, Detroit, Mich.

W. E. Wood Co., Detroit, will build 404 x 65 x 150-ft. brick, steel, stone, reinforced concrete engineering building at Woodward Ave. and Wayne St., for Engineering Society of Detroit and University of Michigan. Estimated cost $1,500,000. Harley & Ellington, Detroit, architects.

LAND PLANE HANGARS, Alameda, Calif.

Robert E. McKee, Los Angeles, awarded contract for four landplane hangars, at Naval Air Station, here, $1,149,000. Estimated cost was $900,000. Bureau of Yards & Docks, Navy Dept., Washington, opened bids.

APARTMENT HOUSE, Coco Solo, Canal Zone.

McCarthy Brothers Construction Co., St. Louis, Mo., is low bidder at $872,684 for an apartment house at the Naval Submarine Base.

BREAKWATER, Coco Solo, Canal Zone

Frederick Snare Corp., New York, awarded contract by Bureau of Yards & Docks, on cost-plus-fee basis for constructing breakwater at Naval Air Station, Coco Solo. Estimated cost $2,840,000.

BLUE MOUNTAIN DAM, Waveland, Ark.

John Kerns Construction Co., Omaha, Nebr., awarded contract by U. S. Engineers for outlet works of Blue Mountain Dam near Fort Smith, Ark., on Petit Jean River, a tributary of the Arkansas River, $686,877. Dam will be a rolled earth fill 2,700 ft. long and 82 ft. high.

NOTE—Additional bidding and contract news on over 600 projects, large and small, appears in the Construction News Section beginning on page 13.

OBITUARY

ZARA WITKIN, 39, civil engineer lately asociated with W. F. Ruck, architect of Los Angeles, died June 6 in Los Angeles. Witkin, a graduate of the University of California, from 1924 to 1932 was chief engineer of Herbert N. Baruch Corp., Los Angeles. Earlier in life he worked for Southern Pacific as engineer of maintenance-of-way, as engineer for the San Francisco Bureau of Governmental Research, and as construction engineer with MacDonald & Kahn, Los Angeles. He had also been employed as consulting engineer to Zavodostroy, U.S.S.R. Witkin was made president in 1935 of the Fabricated Houses, Inc.

ARTHUR W. P. BLOHM, assistant sanitary engineer in the bureau of sanitary engineering of the Maryland State Department of Health, died in Baltimore, June 19. Blohm, a graduate of the Polytechnic Institute, Baltimore, had been with the state department of health for 21 years.

FREDERICK PHILLIPS, 69, civil engineer who practiced in New York and Florida before locating in Peterboro, N. H. in 1915, died in Peterboro June 18. Phillips, a native of Little Falls, N. Y., was an alumnus of Cornell University.

WILLIAM J. MCFAUL, who was assistant manager of the engineering and construction department of the Gulf Oil Corp. at Pittsburgh until his retirement a year ago, died last week in Cleveland.

CHARLES J. W. PLATT, 79, head of the building firm in Philadelphia bearing his name, died last week in that city. Platt's firm built many municipal and railroad structures in Philadelphia.

BENJAMIN ROUND, 76, former superintendent of construction for the Syracuse, N. Y. water department, died June 20 in that city. Round had been employed by the water department for 32 years.

FREDERICK J. BENCING, 65, surveyor of San Diego, Calif., was found dead from heat and thirst June 22 near Salton Sea. Bencing became lost from his surveying party three days previous.

JACK BALL, 35, instrument man for the Wyoming State Highway Department, died May 24 at Cokeville, Wyo. Ball, who had been with the Wyoming department since 1931, received his education at the Colorado School of Mines.

WILLIAM ROBERTSON, 81, for 25 years a superintendent of construction for the state of Minnesota, died recently in St. Paul.

JAMES S. RINEHART, 64, retired road building contractor and part owner of the firm of Rinehart Bros. Co., roadbuilders, died June 13 in East Liverpool, Ohio.

JAMES H. MCMAHON, retired builder and street paving contractor, died June 20 in Newark, N. J. He had formed the McMahon Construction Co. in 1910 and was at one time assistant superintendent of streets in Newark. He had also worked as general superintendent of the Jersey Paving Co. of Cleveland and Newark.

WALTER JONES, 53, city commissioner of Dunn, N. C. and in charge of the city's water plant, died June 15.

HARRY W. WILLS, 55, county engineer of Iron County, Wis., died recently in Crystal Falls, Wis.

CONTRACTS AND CAPITAL

ENGINEERING construction awards for the week total $34,869,000, a drop of 64 per cent from the record volume of last week, and 17 per cent below the figure for the corresponding 1939 week.

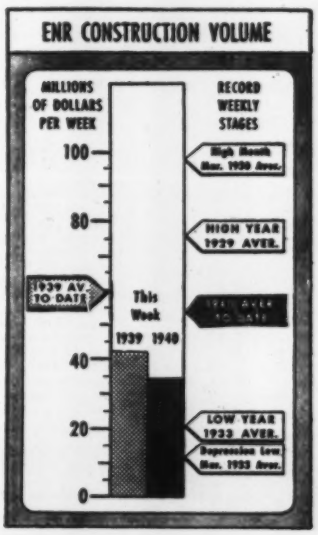
Private awards top their volume for the 1939 week by 34 per cent, but are 70 per cent below the high of a week ago. Public construction is 30 and 60 per cent lower, respectively, than last year and last week.

The current week's construction brings 1940 volume to $1,389,616,000, a level 11 per cent below the 26-week period last year. Public awards, $905,372,000, 23 per cent below the 1939 period, are responsible for the decrease, as private construction, $484,244,000, is 24 per cent higher than a year ago.

In the classified construction groups, sewerage and public buildings are above their respective volumes of a week ago. Comparisons with the 1939 week, however, reveal gains in industrial buildings, commercial building and large-scale private housing, earthwork and drainage, and unclassified construction.

New capital for construction purposes for the week totals $14,791,000, a decrease of 66 per cent from the volume for the corresponding 1939 week. The current week's financing is made up of $14,166,000 in state and municipal bonds, $500,000 in corporate security issues, and $125,000 in RFC loans for public improvements.

New construction financing for the year to date, $632,535,000, is 33 per cent lower than the $951,186,000 reported for the 26-week period last year.



CONTRACTS

(Thousands of dollars)

	Week Ending June 29 1939	June 20 1940	June 27 1940
Federal	$5,836	$35,930	$4,752
State & Municipal	27,547	22,897	18,696
Total public	$33,383	$58,827	$23,448
Total private	8,517	37,459	11,421
TOTALS	$41,900	$96,286	$34,869
Cumulative 1940 (26 weeks)			$1,389,616
1939 (26 weeks)			$1,563,224

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial building, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1939 26 Wks.	1940 26 Wks.
NON-FEDERAL	$639,759	$632,535
Corp. Securities	126,264	89,218
State & Mun.	320,898	449,164
R.E.A. loans	43,732	.....
U.S.H.A. loans	146,419	87,204
R.F.C. loans	2,446	6,949
FEDERAL	$311,427	$.....
TOTAL CAPITAL	$951,186	$632,535

FHA MORTGAGES

	Week Ending June 24 1939	June 15 1940	June 22 1940
Selected for appraisal	$23,130	$27,783	$26,037*
Cumulative 1940 (25 weeks)			$608,273*
1939 (25 weeks)			$579,282

* Subject to revision.

ENR INDEX NUMBERS

Index Base = 100		1913	1926
Construction Cost	June '40	241.59	116.13
Building Cost	June '40	201.65	109.00
Volume	May '40	201	88

CONTRACT UNIT PRICES

What contractors are bidding on different kinds of construction work

BASCULE BRIDGE CHEBOYGAN, MICH.

OWNER: City of Cheboygan and Michigan State Highway Dept., Lansing; Murray D. Van Wagoner, state highway commissioner.

PROJECT: Construction of 3-span bascule type bridge over Cheboygan River on U. S. Route 23, in city of Cheboygan, Mich.

CONDITIONS: Contractor to furnish all materials and complete work by Dec. 1, 1940. Rail and highway transportation facilities available. Wage rates are: skilled labor, $1.12½ per hr.; semi-skilled, 75c.; and common, 50c. per hr. Cheboygan River can also be used for transportation of equipment and materials.

BIDS: Seven bids were opened March 27, 1940, ranging from the contract low of $187,512 to $221,994.

LOW BIDDERS:

1. W. J. Storen Co., Detroit, Mich. (contract).. $187,512
2. Fry & Kain, Lansing, Mich..... 190,604
3. A. H. Proksch, Iron River, Mich..... 191,323

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Temp. foot bridge	L. S.	$1,700.00	$1,000.00	$2,000.00
2. Remove exist. structures	L. S.	6,000.00	1,000.00	500.00
3. Channel excavation	6,470 c. y.	.80	1.00	.50
4. Cofferdams, bascule piers	L. S.	5,800.00	10,000.00	1,000.00
5. Cofferdams, abut. and wingwalls	L. S.	3,500.00	3,000.00	600.00
6. Dry excavation	160 c. y.	1.00	1.00	1.00
7. Wet excavation	1,403 c. y.	1.50	1.00	1.00
8. Timber piles, furnished	6,070 l. f.	.20	.40	.35
9. Timber piles, driven	5,608 l. f.	.18	.40	.50
10. Timber sheet piling, left in pl., 3-in. B.J.	754 s. f.	.50	.50	.40
11. Tremie concrete	851.4 c. y.	6.00	15.00	16.00
12. Gr. A. conc., mass conc. in piers	716.6 c. y.	8.00	15.00	14.00
13. Gr. A conc., encl. walls and house	77.2 c. y.	25.00	15.00	20.00
14. Gr. A conc., abut. and wingwalls	776 c. y.	12.00	15.00	13.00
15. Gr. A. conc., superstructure	120 c. y.	17.00	15.00	13.00
16. Grade B conc., cylinders	6.4 c. y.	8.00	15.00	20.00
17. Gr. A conc., counterweight	121.8 c. y.	15.00	10.00	16.00
18. Cement	3,793 bbl.	2.00	2.00	2.40
19. Reinforcing steel	88,000 lb.	.04	.04	.04
20. Structural steel	465,000 lb.	.093	.071	.09
21. Bascule span rdwy. floor, open grid	2,110 s. f.	2.00	2.00	2.00
22. Bascule span sidewalk floor, filled	700 s. f.	1.75	2.00	1.75
23. Bridge railing, basc. span	128.3 l. f.	7.00	7.70	7.50
24. Bridge rail, appr. spans and wingwalls	328.4 l. f.	6.20	8.00	6.50
25. Counterweight, punchings	27,000 lb.	.016	.04	.0225
26. Cast iron nosing	900 lb.	.15	.15	.20
27. Rubbed surface finish	8,840 s. f.	.10	.10	.10
28. 16-os. sheet copper	201 lb.	.50	.50	.50
29. ½-in. cork filler	35 s. f.	.50	.40	.50
30. C. I. floor drains	8 ea.	20.00	2.50	5.00
31. Operators house, misc.	L. S.	2,600.00	3,500.00	3,000.00
32. Machinery	22,500 lb.	.46	.37	.40
33. Special machinery	L. S.	1,200.00	1,000.00	1,100.00
34. Special steel castings	11,200 lb.	.27	.26	.40
35. Motors and brakes	L. S.	5,200.00	5,100.00	5,300.00
36. Switchbd., control stand, equip.	L. S.	3,800.00	3,600.00	3,800.00
37. Limit switches, interlock. equip.	L. S.	750.00	750.00	800.00
38. Submarine cables	L. S.	2,400.00	1,700.00	1,700.00
39. Conduit, wiring, light. fixt., etc.	L. S.	3,900.00	3,800.00	3,800.00
40. Traffic gates, gate control, lights	L. S.	2,300.00	2,300.00	2,400.00
41. Barrier units and appurt. furn'd.	L. S.	10,900.00	10,800.00	11,250.00
42. Additional barrier units, etc	L. S.	250.00	250.00	300.00
43. Instrument case, road magnets, furnished	L. S.	1,900.00	1,900.00	2,000.00
44. Instrumet case, road magnets, place	L. S.	185.00	200.00	250.00
45. Furn. compressor units	L. S.	450.00	425.00	500.00
46. Place compressor units	L. S.	65.00	65.00	200.00
47. Air piping	L. S.	475.00	450.00	500.00
48. Steel sheet piling, cylinders	1,920 s. f.	1.10	1.00	1.10
49. Sand, gravel fill — cylinders	41 c. y.	2.00	2.00	3.00
50. Miscellaneous timber	L. S.	650.00	750.00	750.00
51. Miscellaneous steel	900 lb.	.75	1.00	.60
52. Field. painting	L. S.	1,500.00	1,220.00	1,500.00
53. Remove old pavement	2,112 s. y.	.45	.30	.50
54. Remove curb	63 l. f.	.17	.15	.20
55. Remove sidewalk	451 s. y.	.22	.15	.15
56. Remove catch basins	4 ea.	10.00	5.00	25.00
57. Earth excavation	6,828 c. y.	.30	.15	.35
58. Overhaul	8,564 y. mi.	.05	.10	.10
59. 6-in. sewer	22 l. f.	.50	60	.80
60. 8-in. sewer	78 l. f.	.60	.75	1.00
61. 10-in. sewer	68 l. f.	1.00	.90	1.10
62. 12-in. sewer	40 l. f.	1.10	1.25	1.30
63. 18-in. sewer	20 l. f.	2.25	2.00	2.50
64. 12-in. sewer, open joints	120 l. f.	1.10	1.25	1.80
65. Manholes, 1-A	6 ea.	125.00	125.00	75.00
66. Catch basins, 3-B	12 ea.	75.00	75.00	65.00
67. Catch basin traps	8 ea.	15.00	20.00	20.00
68. Covers, type A	2 ea.	15.00	15.00	20.00
69. Reconstruct manholes	3 ea.	40.00	45.00	50.00
70. Gr. A conc., outlet headwalls	1.4 c. y.	12.00	25.00	20.00
71. Steel reinf., outlet headwalls	60 lb.	.04	.04	.07
72. Fine grading and cleanup	5.41 sta.	12.00	25.00	15.00
73. Conc. pavement, 9-7-9-in.	2,457.1 s. y.	1.65	2.25	2.00
74. Conc. pavement, 7-in. uniform	148.6 s. y.	1.80	2.00	2.00
75. Pavement reinforcement	2,457.1 s. y.	.25	.20	.30
76. Conc. end header	64 l. f.	.75	.75	1.00
77. Conc. curb, detail 1	114 l. f.	1.00	.80	1.00
78. Conc. curb, detail 2	710 l. f.	.85	.80	1.00
79. Conc. curb, detail 2-A	62 l. f.	1.00	.80	1.00
80. Spec. conc. curb	218.5 l. f.	1.00	1.00	1.50
81. Conc. driveway return	203 l. f.	1.50	1.00	1.00
82. 4-in. conc. sidewalk	5,493 s. f.	.15	.15	.20
83. 6-in. conc. sidewalk	2,355 s. f.	.20	.20	.23
84. 7-in. conc. sidewalk	994 s. f.	.22	.25	.25
85. Aggregate approaches	99 c. y.	2.00	2.00	2.50
86. Bitum. approach mixture	27 ton	6.00	8.00	10.00
87. Sodding	1,343 s. y.	.25	.30	.25
88. 2-in. double pipe handrail	215.5 l. f.	2.50	2.25	3.00
89. Conc. project markers	2 ea.	15.00	15.00	20.00
90. Maintain cross traffic (1 intersection)	L. S.	250.00	50.00	500.00

HIGHWAYS, CHATHAM COUNTY, GEORGIA

OWNER: Georgia State Highway Dept., Atlanta; Warren R. Neel, state highway engineer.

PROJECT: Concrete paving 2.321 miles of Savannah-Brunswick Road in Chatham County, Ga. Roadway 22 ft. wide. Involves removal of some old concrete pavement, and existing bridge. Bridge demolition requires channel excavation to remove embankment.

CONDITIONS: Contractor to furnish materials. Rail, highway and water transportation facilities available. Wage rates are: skilled labor, 60c. per hr.; semi-skilled, 40c.; and common labor, 30c. per hr.

BIDS: Ten bids were received April 12, 1940, ranging from the contract low of $97,615 to $106,374.

LOW BIDDERS:

1. Espy Paving and Constr. Co., Savannah, Ga. (contract) $97,615
2. Cornell-Young Co., Macon, Ga..... 100,073
3. Wm. F. Bowe, Jr., Augusta, Ga..... 101,458

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	L.S.	$3,300.00	$500.00	$800.00
2. Clear and grub	1.1 ac.	100.00	80.00	300.00
3. Common and borrow excav.	8,665 c.y.	.39	.28	.30
4. Com. and borrow excav., (sand clay subbase embankment)	10,379 c.y.	.39	.38	.35
5. Com. excav., cut slopes	2,800 l.f.	.10	.20	.09
6. Ditch excavation	141 c.y.	.50	.45	.60
7. Overhaul, sand clay subbase embk.	277,828 sta.y.	.005	.008	.005
8. 18-in. Cl. B conc. pipe	510 l.f.	1.55	1.70	1.75
9. 15-in. std. rein. conc. pipe	30 l.f.	1.48	1.60	1.65
10. 18-in. std. rein. conc. pipe	30 l.f.	1.55	1.70	1.75
11. Remove culvert pipe	200 l.f.	.20	.18	.50
12. Grassing shoulders and slopes	40,687 s.y.	.03	.025	.04
13. Select. mat'l, shoulder constr	2,599 c.y.	.50	.60	.70
14. Overhaul on above mat'l	5,415 c.y.	.05	.05	.06
15. Remove concrete pavement	8,726 s.y.	.45	.25	.30
16. Guard rail, type A timber posts, Resiliflex	768 l.f.	1.10	1.20	1.20
17. 9x7x9-in. plain cement conc	20,894 s.y.	2.24	2.45	2.42
18. 9x7x9-in. H.E.S. concrete	9,512 s.y.	2.38	2.57	2.56
19. Finishing and dressing	55,568 s.y.	.03	.03	.025
20. Rein. conc. approach slabs	320 s.y.	4.90	5.75	5.10
21. Mucking fill slopes	1,070 c.y.	.50	.65	.90
22. Remove existing bridge	L.S.	1,275.00	950.00	2,000.00
23. Channel excavation	400 c.y.	.50	.40	.70
24. Solid sodding	4,672 s.y.	.40	.45	.80

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New Design
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TRUCK MIXERS
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TRUCK MIXER LOADING PLANTS
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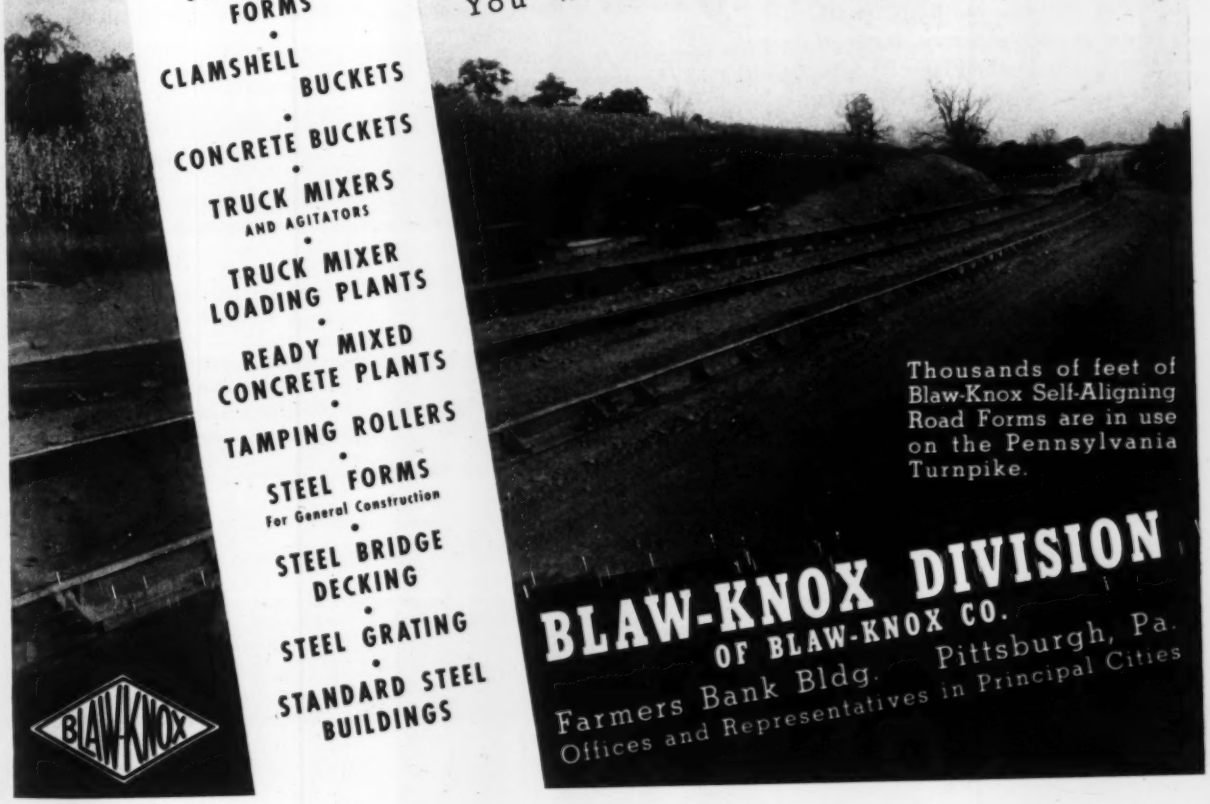
•
STANDARD STEEL BUILDINGS



Thousands of feet of Blaw-Knox Self-Aligning Road Forms are in use on the Pennsylvania Turnpike.

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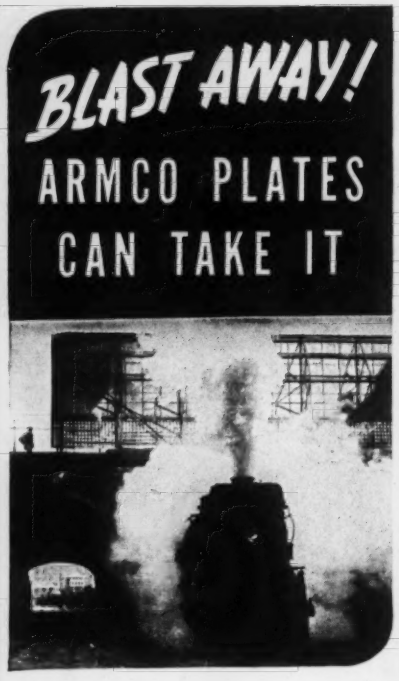

• Let firebox gases, blast fumes and abrasive cinders do their worst after you've installed ARMCO Asbestos-Bonded Blast Plates. Your overhead structures are safe behind a *triple line* of protection.

First, these substantial low-cost plates are made of ARMCO Ingot Iron — proved by 34 years in corrosive service. Second, you have the added protection of a generous zinc coating. And finally, a thick special bituminous material is tightly bonded to the galvanized metal by ARMCO's exclusive Asbestos-Bonding process.

This unusual design provides great durability without excessive weight. Which is why ARMCO Plates are so much easier to handle than heavy, bulky types. Installation costs are low and the job is speeded.

Make sure of low-cost, trouble-free service by protecting your overhead structures with ARMCO Asbestos-Bonded Blast Plates. Write for prices and complete information. Armco Drainage Products Association, 504 Curtis Street, Middletown, Ohio.

ARMCO
ASBESTOS-BONDED
BLAST PLATES

(News Continued from Page 71)

MEN AND JOBS

M. T. MAXWELL, JR., flood control engineer for the CCC in the Tennessee Valley area, has been promoted to assistant chief of projects for the CCC. He succeeds CARL T. JONES, who has resigned to go into private work.

T. R. HIGGINS, chief engineer of New England Structural Co. of Everett, Mass., has resigned to join the staff of the American Institute of Steel Construction as engineer for the New York district. He has been chief engineer for New England Structural for the past eight years and for six years previous to that was structural engineer for the Stone & Webster Engineering Corp. Higgins graduated from Tufts College in 1921 with a civil engineering degree, and before joining Stone & Webster worked for the Massachusetts State Highway Department and the Santa Fe R. R. in Texas.

DONALD R. WARREN, senior bridge engineer for the California State Division of Highways, has resigned to open offices in Los Angeles for private practice. He was an assistant engineer on the construction of the San Francisco-Oakland Bay Bridge.

W. H. BUCK and J. L. SORBEL have joined the sanitary engineering division of the South Dakota State Board of Health. Buck is leaving the Mellon Institute, Pittsburgh, Pa., and Sorbel has been with the South Dakota State Highway Commission and the WPA.

P. L. ADKINS, formerly of Roseburg, Ore., is serving as resident engineer, and ROD INBODY, of Chelan, Wash., as field engineer for the Big Bend Electric Cooperative, Inc., at Ritzville, Wash. S. S. ALLEN, formerly of the Washington Water Power Co., Spokane, is project superintendent for the cooperative, which plans to build 280 miles of rural distribution lines.

PAUL OVERMYER of Fort Dodge, Ia., and H. R. SEXAUER of Hampton, Ia., have taken over the five Iowa counties formerly under supervision of the Mason City WPA office, which was under the supervision of J. E. WRIGHT. With the change one county previously under Sexauer is being assigned to the territory supervised by GEORGE P. PRICHETT, area engineer stationed at Ames. Another Iowa area office being eliminated is that under the direction of A. H. JOHNSON of Des Moines, who headed three counties. One of these will be placed under the direction of H. G. RUPENER, WPA engineer at Creston, one under D. B. LALLY at Albia, and the other under CHARLES CA[illegible]ER at Oskaloosa. In turn, a county formerly under Johnson is being switched to the area under the supervision of WILLIAM UNSDERFER of Centerville. Wright and Johnson have not announced their plans for the future.

M. G. FULLER of Enid, Okla., has been appointed resident engineer for the Oklahoma State Highway Department with headquarters at Oklahoma City. Fuller was previously employed as engineer of tests for Holway & Neufer, consulting engineers for Pensacola Dam of the Grand River Dam Authority.

GEORGE BLOOMGREN is returning to his old position as city engineer of East Liverpool, Ohio, to succeed HOWARD HENRY. Henry has been city engineer for the past two years.

MARTIN W. KEHART has resigned from PWA to do active duty as a lieutenant in the Civil Engineer Corps, U. S. Navy, on construction of the Mid-Pacific island air bases. Since graduating from the University of Illinois in 1926, Kehart's numerous jobs include: resident engineer inspector with PWA, construction engineer with Lakeside Bridge & Steel Co., Milwaukee, Wis.; resident engineer and designer with the Arkansas State Highway Department, and member of the engineering staff of the U. S. Engineers.

U. A. UNDERWOOD, Wilmington, N. C. and FRED N. THOMPSON, Charlotte, N. C., have been reappointed as members of the North Carolina licensing board for contractors. The appointments are for five year terms.

R. L. SCHMID has been named chief engineer of the Nashville, Chattanooga & St. Louis R.R. to succeed GEORGE F. BLACKIE, who retired Jan. 1 after more than 50 years of service. Blackie joined the line as a rodman in 1886 and became chief engineer in 1931. Schmid, who received his education at the University of Kentucky, began his railroad career with the Louisville & Nashville R.R. in 1906, joining the Nashville line in 1915.

ROBERT A. ALLTON, who supervised construction of the new $4,000,000 sewage disposal plant at Columbus, Ohio, has been named superintendent of the plant and JAMES BLODGETT, who was superintendent of construction under Allton, has been appointed assistant superintendent. Allton and Carl

Flexible Bottom Dump Body, 10 Yard Heavy Duty, Constructed of Aluminum for Geo. M. Brewster & Son, by Veenema and Wiegers, Inc., Paterson, New Jersey.
GEO. M. BREWSTER & SON, INC.
BOGOTA, N. J.

A Revolutionary *New* Type of Dump Body!

IT TAKES MORE BECAUSE IT GIVES MORE!

CONVENTIONAL CONSTRUCTION
METAL PLATE
METAL BOTTOM
WOODEN SUB FLOOR
RIGID BOLSTER
When load strikes rigid bottom, the metal thins as if hit by a peening hammer, and underlying wood is crushed; eventually the bottom fails.
FLEXIBLE CONSTRUCTION
BOTTOM GIVES
Flexible bottom elastically gives when struck, then springs back unharmed.

Here is a dump body worth studying. It's designed to take more punishment; the diagrams show how built-in "give" makes it last longer. It's also designed for lightness, for extra payload capacity.

Aluminum helps combine all advantages. This type of body does not use conventional bolsters; the bottom is supported only by the sides of the cradle. The flexible bottom plate of this design must be thick in order to have the strength required for bearing the load. By using Alcoa Aluminum Alloys the plate is made thick and strong; yet it is light, and does not add needless weight.

In service one of these new bodies is saving enough money, by carrying more payload, to pay the extra cost of using Aluminum in 260 days. Another has been used for 20 months on a coal-stripping job noted for the havoc it plays with truck bodies; this unit is still in excellent condition.

Are you interested? Our engineers will be glad to tell you more about this particular type of body, which they developed.* ALUMINUM COMPANY OF AMERICA, 2108 Gulf Building, Pittsburgh, Pa.

**Patent No. 2,140,590—issued December 20, 1938.*

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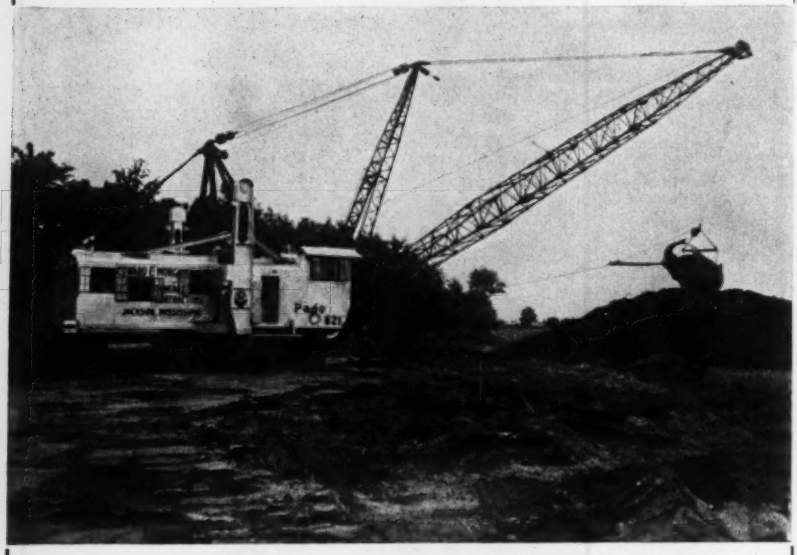
Diesel or electric powered Draglines
3 1/2-cubic-yard capacity and larger



Edward E. Morgan Company used this Page Walker on levee work along the Wabash River near Vincennes, Indiana. The machine was shipped with a 125-foot boom and a 6-cubic-yard Page bucket.

Because PageWalkers are completely modern, fast dragline machines they are establishing new yardage and profit records for their users.

Rugged design plus the Page Diesel engine assures low maintenance and operating costs. Moreover, the large circular base and the positive crank-action walking mechanism give more freedom from ground and weather conditions and permit immediate movability in any direction.

Before buying any dragline learn all about a Page Walker in a size suitable for your job.

PAGE ENGINEERING COMPANY
Clearing Post Office • Chicago, Illinois

D. McGuire, chief chemist, has had divided control of the plant's operation since its completion.

MILTON E. COUNTRYMAN, director of the materials laboratory for the Missouri State Highway Department and stationed at Jefferson City, has accepted a position in Washington, D. C., as technologist for the National Bureau of Standards, Department of Commerce. Countryman, who has been with the Missouri department nearly 15 years, received his Master's degree from the Missouri School of Geology and Mines in 1925, following work at Rensselaer Polytechnic Institute.

H. R. STICKNEY, for 15 years consultant to the U. S. Engineers on harbor, utility and flood control work, has been appointed public service engineer for the city of Providence, R. I. RALPH W. EATON, who has been public service and traffic engineer at Providence for a number of years, will henceforth devote his entire time to traffic engineering and will be in charge of this work for the city. Stickney spent several years at Washington, D. C., as engineering analyst of the utilities division of the Securities and Exchange Commission and was senior engineer on the Rhode Island survey of public utilities conducted in 1937–8 by Frederick A. Young.

L. H. HUNTLEY recently resigned his position as construction engineer on the Possum Kingdom Dam in Texas to become general superintendent of dam construction with the Great Lakes Dredge and Dock Co., Chicago, Ill. Huntley has spent 30 years on the design and construction of hydro-electric and irrigation projects in many parts of the United States, Mexico, and South America. He has worked for Daniel W. Mead, the J. G. White Engineering Corp., the Aluminum Co. of America, Charles B. Hawley Engineering Corp., the Tennessee Valley Authority and the Ambursen Engineering Corp.

J. R. W. DAVIS, chief engineer of the Great Northern Ry. for the past 14 years and located at St. Paul, has retired after 36 years with that line. Davis is being succeeded by CARL M. NYE, who has been assistant chief engineer since 1920. Davis, as chief engineer, was in charge of construction of an 8 mile tunnel through the Cascade Mountains in Washington, and under his direction the railway's lines were extended from Oregon into California. Nye has been a member of the Great Northern since 1913. Prior to that he was with the Milwaukee and Oregon Trunk Roads and the Rock Island R.R.

HARRY F. JOHNSON, associate engi-

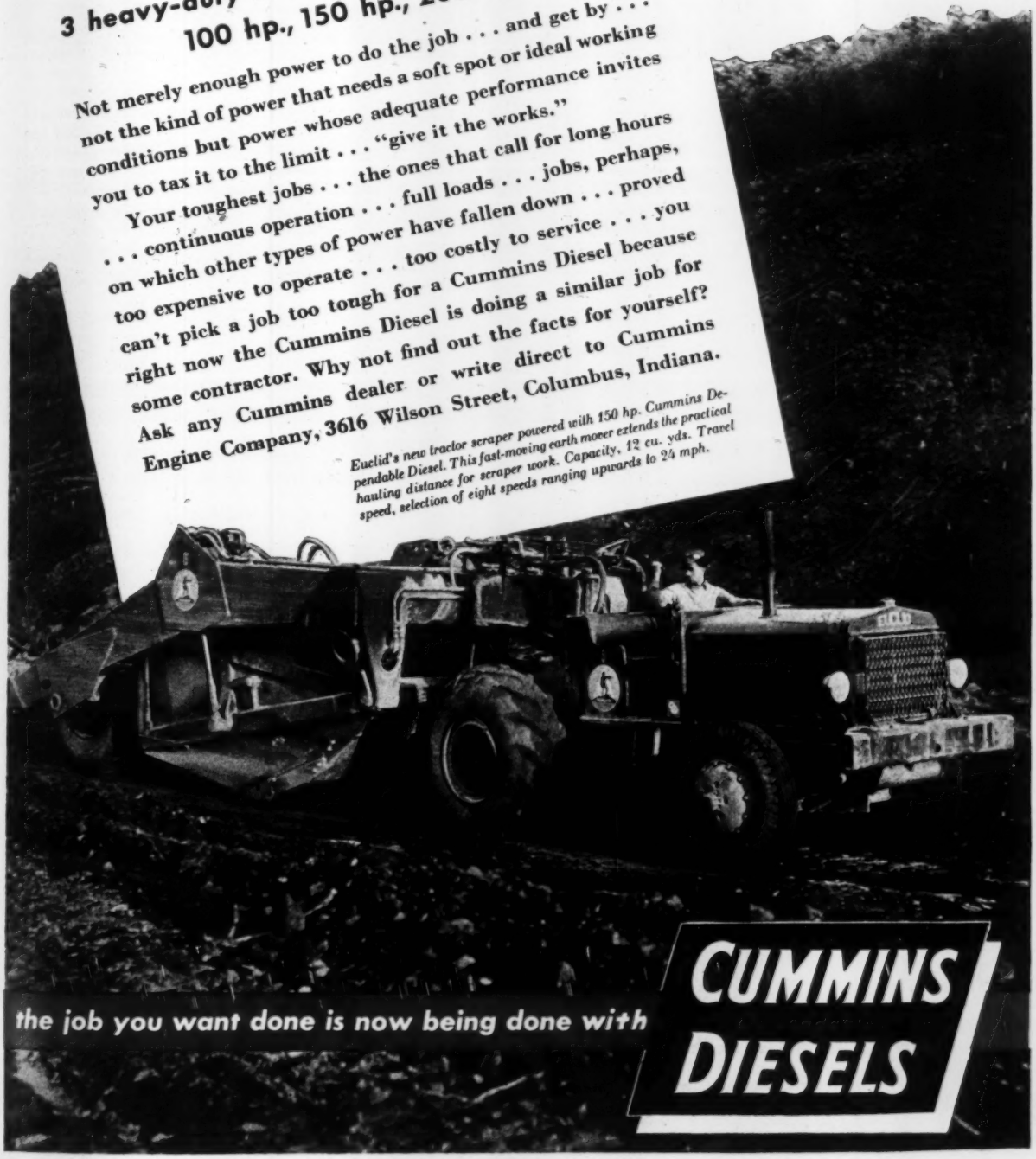
MORE POWER TO YOU

3 heavy-duty models for your dump trucks
100 hp., 150 hp., 200 hp.

Not merely enough power to do the job . . . and get by . . . not the kind of power that needs a soft spot or ideal working conditions but power whose adequate performance invites you to tax it to the limit . . . "give it the works."

Your toughest jobs . . . the ones that call for long hours . . . continuous operation . . . full loads . . . jobs, perhaps, on which other types of power have fallen down . . . proved too expensive to operate . . . too costly to service . . . you can't pick a job too tough for a Cummins Diesel because right now the Cummins Diesel is doing a similar job for some contractor. Why not find out the facts for yourself? Ask any Cummins dealer or write direct to Cummins Engine Company, 3616 Wilson Street, Columbus, Indiana.

Euclid's new tractor scraper powered with 150 hp. Cummins Dependable Diesel. This fast-moving earth mover extends the practical hauling distance for scraper work. Capacity, 12 cu. yds. Travel speed, selection of eight speeds ranging upwards to 24 mph.



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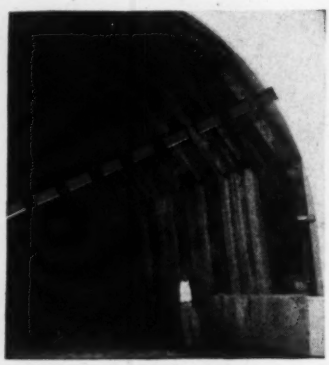
A *Line of Attack*
ON YOUR TOUGHEST PROBLEMS

They're toughest, aren't they, when you have to use a soft-boiled budget on a hard-boiled job.

Using Wolmanized Lumber* is a way of meeting that problem. Lumber itself offers real economies. And Wolmanized Lumber has what it takes to do the job year after year in situations where ordinary materials would become only a memory.

Wolmanized Lumber is being used for bridges, docks, trestles, tunnels, mine timbering and in industries like paper and textile manufacture, where ever-present moisture condensation is tough on ordinary lumber.

To account for its dependability, remember this: it is the material which, alone of its kind, is always vacuum-pressure treated under one specification, sold under one brand, from coast to coast. We sell no lumber ourselves, but will be glad to give full information. Address AMERICAN LUMBER & TREATING COMPANY, 1435 Old Colony Building, Chicago.



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The highway bridge above, this tunnel timbering, only indicate the range of uses for Wolmanized Lumber. Your architect will recommend it for your new home—and it is being used wherever lumber's usefulness is enhanced by great endurance.

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WOLMANIZED LUMBER

neer in the United States Lake Survey, Detroit, Mich., has retired after 47 years of service. Johnson entered the government service in 1892 and spent most of his career on primary triangulations in the Great Lakes region. In 1907, while on furlough, he was in charge of alignment of the Canadian half of the Michigan Central tunnel under the Detroit River at Detroit.

CHARLES H. SNYDER, graduate of the school of engineering at Cornell University, has been reappointed city engineer of Oswego, N. Y. Snyder entered the city's service in 1908.

WILLIAM M. WALKER, JR., commissioner of purchases and supplies at Detroit, has been appointed commissioner of public works for the city to replace HENRY E. BEYSTER. Walker has also served as city WPA coordinator at Detroit, superintending the procurement for the city of works relief projects and the assignment of projects to welfare recipients.

MEETINGS

NATIONAL CRUSHED STONE ASSOCIATION, Hotel Jefferson, St. Louis, Mo. Jan. 22-24.

AMERICAN INSTITUTE OF PLANNERS, New York City, Jan. 25-26.

NATIONAL PUBLIC HOUSING CONFERENCE, Washington, D. C., Jan. 26-28.

AMERICAN ROAD BUILDERS ASSOCIATION, Chicago, Jan. 29-Feb. 2.

NATIONAL PAVING BRICK ASSOCIATION, annual meeting, Congress Hotel, Chicago, Ill., Jan. 30-31.

ASSOCIATED GENERAL CONTRACTORS, National Convention, Peabody Hotel, Memphis, Tenn., Feb. 5-8.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS, Columbus, Ohio, Feb. 8–10.

REGIONAL AND LOCAL

ARIZONA GOOD ROADS ASSOCIATION, annual meeting, Globe, Ariz., January 22-23.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, sixth international meeting, Lakeside Hall, Cleveland, Ohio, Jan. 22-26.

NORTH CAROLINA SOCIETY OF SURVEYORS, annual meeting, North Carolina State College, Raleigh, N. C., Jan. 24.

ANNUAL ENGINEERS INSTITUTE, North

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"YES, SIR! INTERESTING FACTS ABOUT ASPHALT"
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FOR SAFE WIRE ROPE FASTENING

STANDARDIZE on the Genuine CROSBY CLIP

PERFECT GRIP • DROP FORGED STEEL • HOT DIP GALVANIZED safe since 1853

DEALERS WITH STOCK IN ALL PRINCIPAL CITIES

(News continued from page 43)

MEN AND JOBS

CHARLES E. CARL, who recently received a master's degree in civil engineering from the University of Missouri, has been appointed an instructor in the sanitary engineering department at South Dakota State College.

JAMES C. HARRIS, city manager of Roxboro, N. C., has been named city manager of Hazard, Ky. Before going to Roxboro to serve as city manager 4½ years ago, Harris, a graduate of the University of North Carolina, served as city manager of Fuquay Springs, N. C.

WILLIAM ENKEBOLL, former instructor in general engineering at the University of Washington, is now employed as assistant in the civil engineering department at Massachusetts Institute of Technology. Following his graduation from the University of Washington, for a time Enkeboll worked in the engineering department of the city of Seattle as draftsman and designer. In 1935–36 he was employed by the Pacific Car & Foundry Co. as draftsman and engineer.

R. S. SWINTON, professor of engineering at the University of Michigan, is now conducting an engineering review class in Detroit to prepare engineers for the Michigan state registration examinations.

E. G. SCHWOPPE, former contract engineer at Lansing, Mich. for the Michigan State Highway Department, has been transferred by the department to serve as district engineer at Plymouth.

C. C. FISHER, construction engineer in charge of the $8,000,000 Deschutes project of Central Oregon for the Bureau of Reclamation, has been placed in charge of the Bureau's studies for a proposed irrigation project in the Willamette valley in Oregon. Fisher's headquarters will be in Portland, but before reporting there, he will go to Denver to complete his report on the Grand Ronde investigations in eastern Oregon. Fisher, a graduate of the University of Oregon, with a civil engineering degree, had worked in Mexico and Russia. He is being succeeded by DEANE S. STUVER, who is being transferred from the Washington office where for the past three years he has been assistant general supervisor of operations and maintenance for all federal reclamation projects. Stuver was first employed by Bureau in 1910. Following numerous promotions in 1926 he

ER IN OVERALLS!

With no pretense to beauty, "Caterpillar" Diesel Engines are designed "one hundred per cent" for *performance*—anywhere! Set them in a shack or out on a rock pile. . . . Spike them onto a couple of cross-timbers. . . . Put them on the roughest, toughest jobs you have—and watch 'em go to it! Day-and-night going won't daunt them. Long stretches of heavy, varying, torturing loads are all in the day's work. They'll put up with punishment that would send many a less carefully engineered engine into an early repair bill. Power in overalls—that's "Caterpillar" Diesel!

The history of "Caterpillar" Diesels proves their ruggedness, stamina and durability. Records of 10,000, 20,000 even 30,000 operating hours are not uncommon. And big *savings* in operating costs are no less extraordinary. . . . Fuel, the principal item, often runs as little as one-fourth the cost of other types of power. Maintenance, under normal care, likewise is low. Altogether, there's nothing to compare with Diesel power as represented in "Caterpillar" Diesel Engines today.

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Below—Two of the three sturdy "Caterpillar" Diesel Engines powering crane, derrick, electric welder, etc., for the Hedrick Sand & Gravel Co., near Lilesville, N. C.

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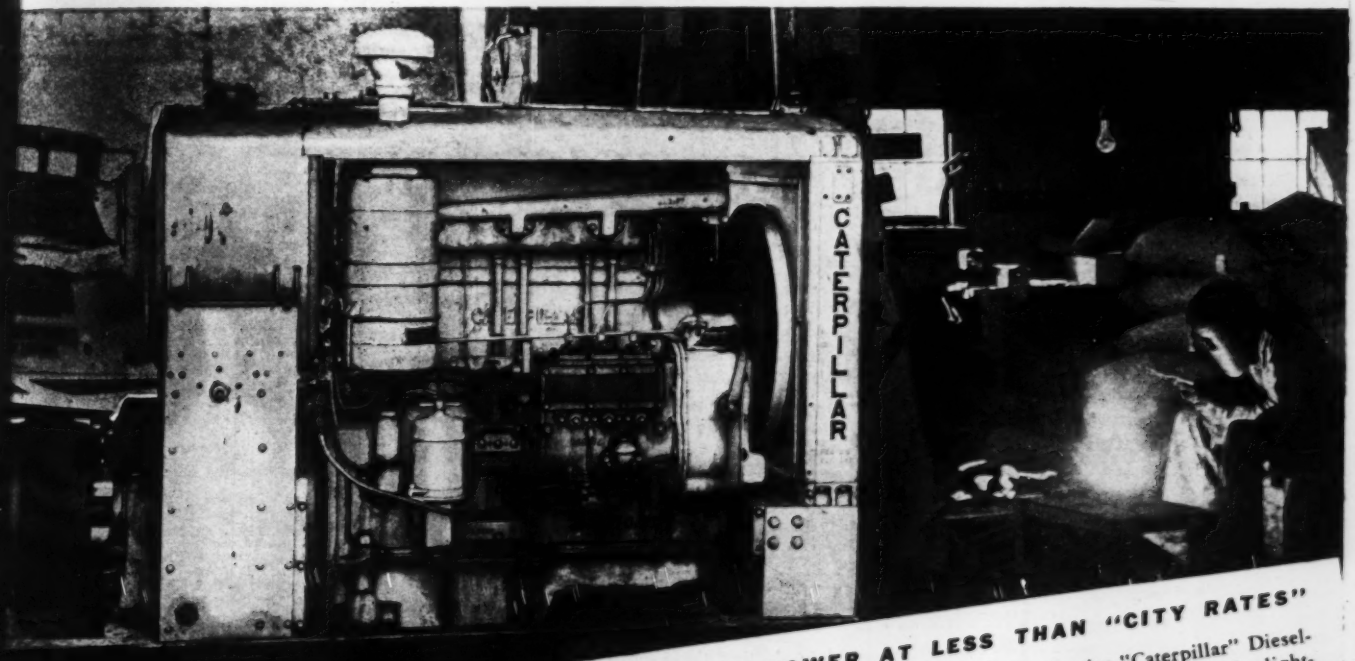
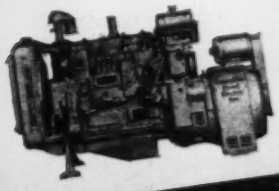
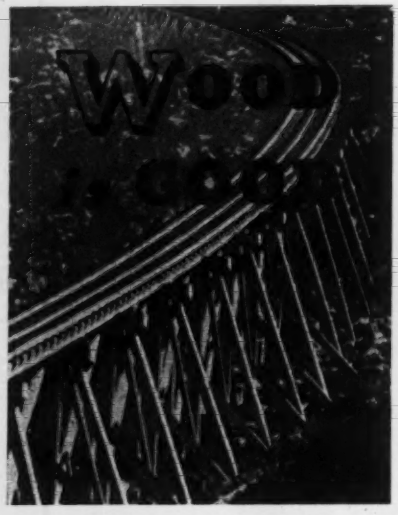


ELECTRIC POWER AT LESS THAN "CITY RATES"



with new popular-size "Caterpillar" Diesel-Electric Sets (13 to 66 kw.). Ideal for lighting work camps, night operations, pumping water, powering shop tools. Complete, compact, self-regulating. No external control apparatus or skilled operator required. Low price—and unusually low operating cost.



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CHROMATED ZINC CHLORIDE

• Wood is one of the most versatile construction materials. It possesses resiliency, strength, low heat conductivity, ease of fabrication and maintenance, availability and low initial cost. Yet wood in its normal state is subject to decay, termite damage and fire. Proper preservative treatment reduces its inflammability and effectively overcomes other causes of premature destruction.

Wood is properly preserved when pressure treated with recognized materials such as DU PONT Chromated Zinc Chloride. Continuous comparative tests show that this type of lumber is more resistant to decay than any other "clean" treated lumber.

DU PONT Chromated Zinc Chloride treated lumber is also repellent to termites, fire retarding, resistant to abrasion, clean, odorless, paintable and readily fabricated. This lasting durability permits design for the actual load to be supported without anticipation of weakening from decay.

It will pay you to investigate the possibilities of timber treated with DU PONT Chromated Zinc Chloride. Write us today.

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became project manager and in 1934 was assigned to Washington.

M. C. BISHOP has been made director of a new division of traffic and safety for the state of Georgia, according to W. C. BRANTLEY, state highway engineer.

HARRY R. HAYES, former managing director of the New York state highway chapter of the Associated General Contractors of America, has been appointed engineer-director of the New York State Crushed Stone Association.

H. A. VON UNWERTH has been named city manager of Muskogee, Okla., succeeding T. P. CLONTS, who recently resigned to become manager of the Grand River Dam Authority.

MODESTO C. ROLLAND, civil engineer and subsecretary of Mexican communications, has begun new duties as chairman of the Mexican Administrative Board for Free Ports.

CAPT. THOMAS F. KERN, chief of the engineering division of the Little Rock, Ark., District, U. S. Engineers, has been promoted to the rank of major. He has been assistant district engineer at Little Rock since Jan. 1939, having been transferred there from Fort Logan, Colo.

A. PARADIS, chief engineer of the provincial department of roads, Province of Quebec, has resigned and ERNEST GOHIER has been named to fill the position.

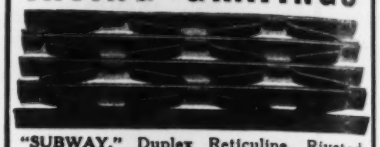
ROGER MYERS has been named engineer for the city of Oxford, Miss. Myers was formerly with the Mississippi State Highway Department.

CHARLES G. HART, graduate of M.I.T. and former superintendent of the city water department at Oneida, N. Y., has been appointed chief operator of the new Ley Creek sewage disposal plant at Syracuse, N. Y. For many years Hart was associated with Wallace & Tiernan Co., Inc., Newark, N. J., manufacturers of water treatment and sewage disposal equipment.

UEL STEPHENS, former regional engineer and assistant regional director for Region No. 5, Public Works Administration, has opened a consulting office in Fort Worth to specialize in municipal projects. When the Fort Worth PWA office was closed recently, Stephens was transferred to Chicago to aid in shifting the Fort Worth staff to the Chicago office.

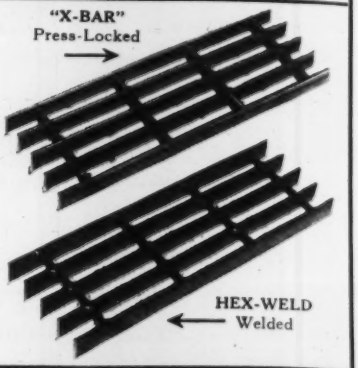
FRANK WOOTEN, JR., who worked for a time with the engineering division of the Tennessee Department of Pub-

IRVING GRATINGS



"SUBWAY," Duplex Reticuline, Riveted

"X-BAR" Press-Locked



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lic Health and the North Carolina State Board of Health, has opened consulting offices in Charlotte, N. C. to specialize in air conditioning and heating and sanitary engineering. Wooten also worked for a time with the U. S. Public Health Service.

JOHN J. LANG, formerly employed in the bureau of plans and surveys of Baltimore, Md., has been appointed secretary-engineer of the Baltimore city planning commission. Lang has been filling the position temporarily since June.

EDWARD T. NETTLETON, former president of the Connecticut Society of Civil Engineers and lately secretary of the New York State Crushed Stone Association, has been appointed general superintendent of the L. Suzio Trap Rock Co. and the York Hill Trap Rock Quarry, Meriden, Conn.

LIEUT. CMDR. GEORGE L. LINDELBERG, civil engineering corps, United States Naval Reserve, Washington, D. C., has been ordered to do duty at the naval air base, San Juan, Puerto Rico.

ROBERT A. KANE, Doylestown, Pa., and A. R. RAMSEY, of Greenberg, Pa., members of the engineering staff of the Pennsylvania General State Authority, have ended their connections with that body. No future plans have been announced.

LIEUT. JOSEPH WHITE, civil engineering corps, United States Navy, has been ordered detached from duty in the fifteenth naval district to do duty at the Philadelphia navy yard as the relief of LIEUT. RAYMOND LAMOREAUX.

CLOVIS J. HARKRIDER, former engineer examiner with PWA, is now connected with the city of Fort Worth, Texas, as resident zoning engineer.

G. C. STREET, JR., civil engineer and formerly with the PWA at Fort Worth, Texas, has been appointed regional director of the Federal Wage and Hour Division with headquarters at Dallas.

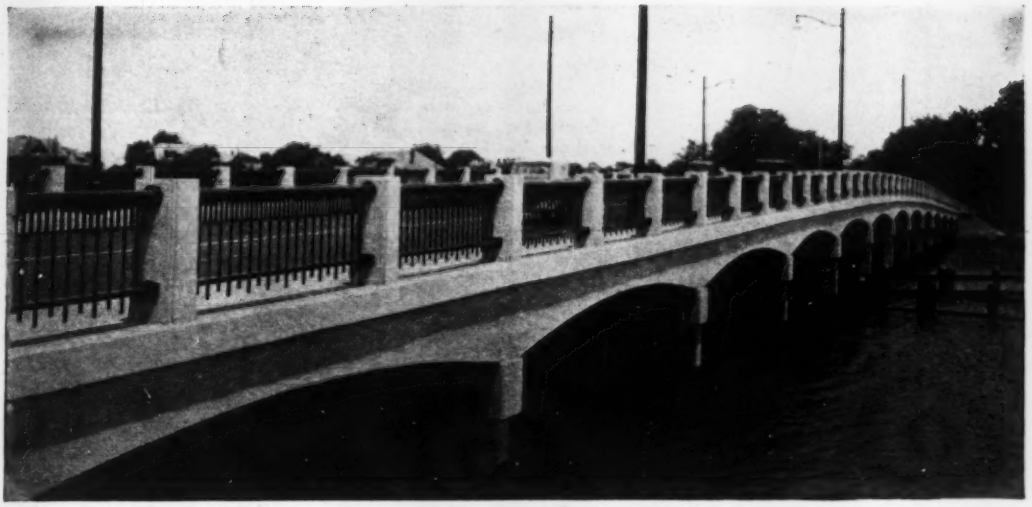
LIEUT. SAMUEL WILSON, civil engineering corps, United States Naval Reserve, has been transferred from Harrisburg, Pa., to do temporary active duty at the naval air station, Key West, Fla.

FRANK J. BRINCE has been appointed city engineer of Eveleth, Minn., to succeed HUGO SHOLUND.

WILLIAM D. FAIRCHILD, resident engineer of construction with U. S. Engineers at St. Paul, has retired after nearly a half century of service with the army engineers. He will make his home in Hastings, Minn.

THAT COOL SPRING NIGHT

Frost Hazard



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USE 'INCOR' 24-HOUR CEMENT

SPRING is fickle . . . temperatures drop suddenly, exposing concrete to freezing risk. Save time, money, worry. Use 'Incor' 24-Hour Cement . . . heat mixing water . . . protect the concrete promptly after placing. 'Incor' hardens and cures 5 times as fast—is safe from freezing that much sooner. For 24-hour service strength, supply enough heat to maintain curing temperature at 60° to 70°.

This better quality 24-Hour Portland cement means better concrete, too. Tidewater Construction Corporation used 'Incor' on the new 13-span Lafayette River Bridge at 26th Street, Norfolk, Va. Working straight through the Winter, 'Incor' cut heating costs, speeded completion, reduced job overhead. And they didn't have to touch the under-side of the arches—because of 'Incor's workability.

Dependable high early strength plus long-time durability—proved by 'Incor's 13-year service record. Use 'Incor'*—you'll be money ahead if you do. Write for copy of booklet entitled "Cutting Concrete Costs." Lone Star Cement Corporation, 342 Madison Avenue, New York.

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'Incor' 24-HOUR Cement means just what the name says—uniform, dependable 24-HOUR service strength. AND LONG-TIME DURABILITY, TOO—proved by 13-year performance record . . . a vital advantage EXCLUSIVE with 'Incor', the FIRST high early strength Portland Cement. Quality pays . . . because better cement makes better concrete.

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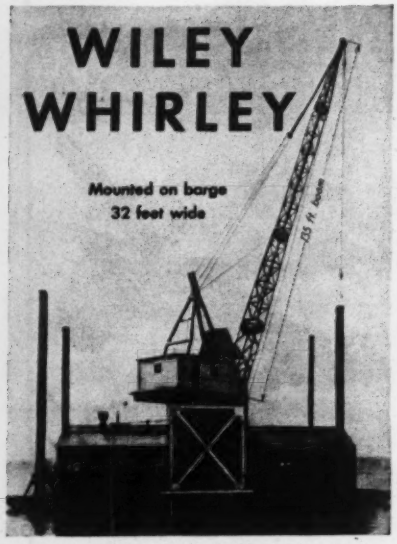

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NEW ENGINEERING BOOKS

(*Continued from p. 76*)

BUSINESS METHODS IN THE BUILDING FIELD—By George Schobinger and Alexander Lackey. 350 pp. Published by the McGraw-Hill Book Co., New York and London. Price $3.50.

FEDERAL REGULATORY ACTION AND CONTROL—By Frederick F. Blachly and Miriam E. Oatman. 356 pp. Published by The Brookings Institution, Washington, D. C. Price $3.

A.S.T.M. STANDARDS 1939—Part I, Metals, 1,308 pp. Part II, Nonmetallic Materials—Constructional, 1,217 pp. Part III, Nonmetallic Materials—General, 1,175 pp. Published by the American Society for Testing Materials, 260 S. Broad St., Philadelphia, Pa. Prices for non-members: any one part, $8; any two parts, $15; all three parts $22.

MASTER SPECIFICATIONS FOR RECONDITIONING, a book published by the Federal Home Loan Bank Board, should be ordered from the Superintendent of Documents, Washington, D. C., not from the HOLC, as stated in our issue of Feb. 29. (Price 30c.)

MECHANICAL WORLD YEAR BOOK 1940—218 pp. Published by Emmott & Co., Ltd., 31 King St., W., Manchester 3, England. Price 1/6.

INVENTORS AND ENGINEERS OF OLD NEW HAVEN—111 pp. Published by the New Haven Historical Society, New Haven, Conn.

M.K.S. UNITS AND DIMENSIONS—By G. E. M. Jauncey and A. S. Langsdorf. 61 pp. Published by The Macmillan Co., New York. Price $1.

STAHLBAU-KALENDER 1940—591 pp. Published by Verlag von Wilhelm Ernst & Sohn, Berlin. Bound 3.35 RM.

REPORTS AND PAMPHLETS

INTRODUCTION TO HOUSING FACTS AND PRINCIPLES—By Edith Elmer Wood. 161 pp. Published by the Federal Works Agency, U. S. Housing Authority, Washington, D. C. Price 30c. from Superintendent of Documents, Washington, D. C.

CONSTRUCTION PLANT AND METHODS for Flood Control on the Lower Mississippi River and Similar Streams—65 pp. Manual of Engineering Practice No. 12, American Society of Civil Engineers, 33 West 39th St., New York City. Price $1 to non-members.

A DECADE OF UTILITY REGULATION IN NEW YORK STATE—Report of the Public Service Commission., New York, N. Y. 340 pp.

THE PORT of Toledo, Ohio (Lake Series No. 7)—Prepared by the Board of Engineers for Rivers and Harbors, War Dept. Price 75c., Supt. of Documents, Washington, D. C. The Ports of Sandusky, Huron, and Lorain, Ohio (Lake Series No. 8)—Price $1. The Ports of Fairport, Ashtabula, and Conneaut, Ohio (Lake Series No. 9)—Price $1.

RESEARCH PUBLICATIONS OF THE POLYTECHNIC INSTITUTE OF BROOKLYN 1938-39—Vol. 2. 96 pp. Published by the Polytechnic Institute of Brooklyn, 99 Livingston St., Brooklyn, N. Y.

HUDSON RIVER COMMON BRICK—Published by the Brick Manufacturers Association of New York, Inc., 2721 Grand Central Terminal, N. Y.

HIGHWAY BARRIERS—72 pp. Published by American Trucking Associations, Inc., 1013 16th St., N. W., Washington, D. C.

ESTUDO SOBRE A RETRACAO DOS CONCRETOS—A bulletin of the Instituto de Engenharia, Sao Paulo, Brazil.

MECHANIZATION IN THE CEMENT INDUSTRY—Published by the Works Progress Administration, National Research Project, Report No. M-3, Philadelphia, Pa.

SYMPOSIUM ON THERMAL INSULATING MATERIALS—Columbus Regional Meeting. Published by the American Society for Testing Materials, Philadelphia, Pa.

HYDRAULIC FRICTION LOSSES IN 1½-IN. AND 2½-IN. COTTON RUBBER-LINED HOSE—Bulletin of Research No. 12. Published by Underwriters' Laboratories, Inc., 161 Sixth Ave., New York City.

DEPARTMENT OF HEALTH—59th Annual Report of the State of New York. 1938. Vol. 1.

PROVINCE OF SASKATCHEWAN—Annual Report of the Dept. of Highways and Transportation. 1938-39.

TORONTO, Ontario, Canada—Annual Report of the Assessment Commissioner. 1939.

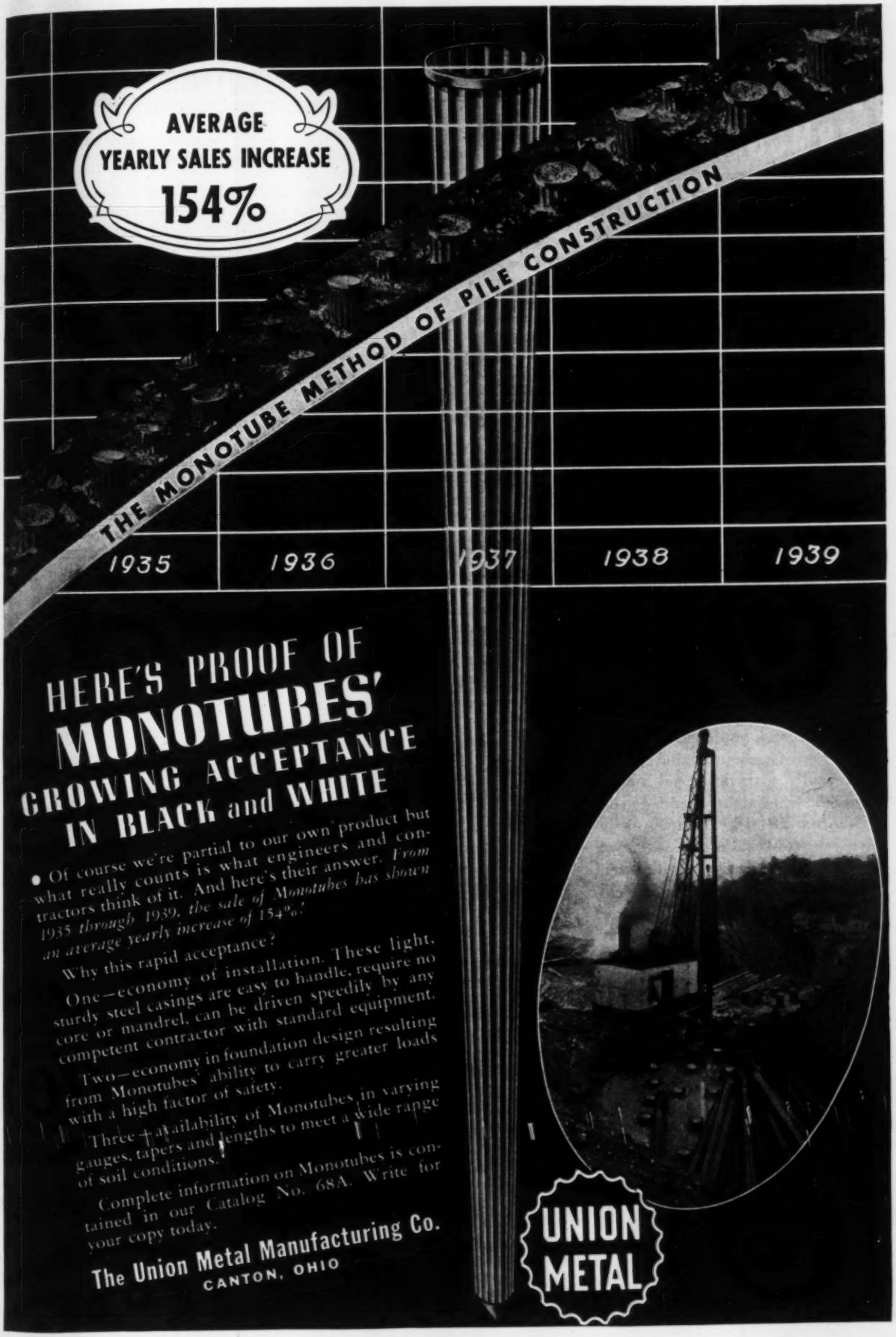
MANSFIELD, Mass.—Annual Report of the Town Officers. 1939. 144 pp.

CAIRO, Egypt—Annual Reports (1930-31; 1932-33). May be obtained from Publications Office, Government Press, Bulaq, Cairo. Price P. T. 100 each.

MANCHESTER, England—Annual Report for 1938, Rivers Dept., Town Hall, Manchester, 2. Price 2/6.

NEW SOUTH WALES, Australia—Report of the Dept. of Works and Local Government. Price 8s. 6d.

CHICAGO—63d Annual Report of the Department of Public Works and Annual Report of the Department of Streets and Electricity for the year ending Dec. 31, 1938. Municipal Reference Library, 1005 City Hall, Chicago, Ill.



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One—economy of installation. These light, sturdy steel casings are easy to handle, require no core or mandrel, can be driven speedily by any competent contractor with standard equipment.

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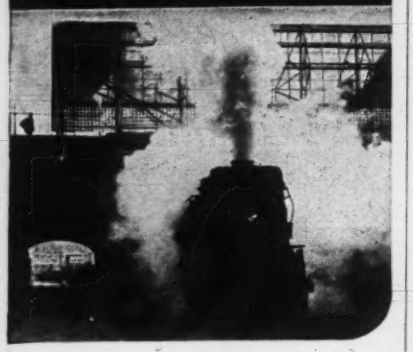

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BLAST PLATES

(News continued from p. 37)

MEN AND JOBS

WILLIAM H. CULLIMORE, who obtained his engineering education at Baltimore Polytechnic Institute and Johns Hopkins University, has been appointed engineer-secretary of the National Paving Brick Association, Washington, D. C., resigning as associate engineer of the Baltimore, Md., department of public works. In 1923 Cullimore was employed at Greensboro as office engineer for the North Carolina State Highway Department, later being promoted to assistant highway engineer. He returned to Baltimore in 1925 as assistant to the sewage engineer of the bureau of sewers.

JAMES GUERIN, who graduated from Armour Institute of Technology in 1908 with a civil engineering degree, has been appointed assistant manager of the village of Western Springs, Ill.

S. S. STEINBERG, dean of the college of engineering at the University of Maryland, has been named chairman of a division of the Maryland Traffic Safety Committee. Members of the division are: W. T. BALLARD, chief engineer of the Marvland State Roads Commission; EZRA B. WHITMAN, chairman of the roads commission; CLARKE GARDNER, city engineer of Salisbury, Md.; R. L. RIZER, city engineer of Cumberland; J. A. BROMLEY, roads engineer of Anne Arundel County, and W. L. BRAUN, traffic engineer of the Baltimore police department.

GEORGE C. MADGOURANIS, who received a bachelor of science degree from Armour Polytechnic Institute in 1938, is now employed as junior civil engineer by the city of Evanston, Ill.

JAMES LYALL STUART, executive director of the Pennsylvania General State Authority, has resigned to devote more time to construction being done by Mellon-Stuart Co., Pittsburgh. DAVID DIEHL will be acting director until a permanent director is appointed.

CHARLES R. SWINFORD, construction engineer who recently supervised a one million dollar department store project in Harrisburg, is now affiliated with the W. F. Keiser & Co., Harrisburg, Pa.

JOHN GISLASON, former area engineer of WPA at Winona, Minn., has been named assistant district engineer of WPA activities at New Ulm, to supervise jurisdiction over Winona, Fillmore and Houston counties. He is being succeeded in the area office by W. T. THATCHER.

EUGENE JEROME HANSON, a graduate of Armour Institute of Technology in 1938 with a civil engineering degree, is now employed by the Toledo, Peoria & Western R. R., Peoria, Ill.

JAMES M. SMITH, area engineer for the WPA in Mahoning and Columbia counties, Ohio, has been named head of WPA operations at Canton to succeed the late EDWARD H. TURNER. Following his graduation from Westminster College, Smith was associated with his father in the construction business —in the firm of K. J. Smith & Son. Smith has been with the WPA since 1935.

MAJ. A. G. MATTHEWS, executive assistant to COL. CHARLES P. GROSS, head of the Rock Island district, U. S. Engineers, has been assigned to new duties at Washington. Maj. Matthews has been at Rock Island 2½ years.

DEWEY NYHART of Killbuck, Ohio, who was handed a 30 day suspension last year as superintendent for the Ohio State Highway Department for Holmes County, has been ordered reinstated by the state civil service commission. Nyhart has been with the highway department for 14 years, having been superintendent for 8 years before being removed for alleged political activities.

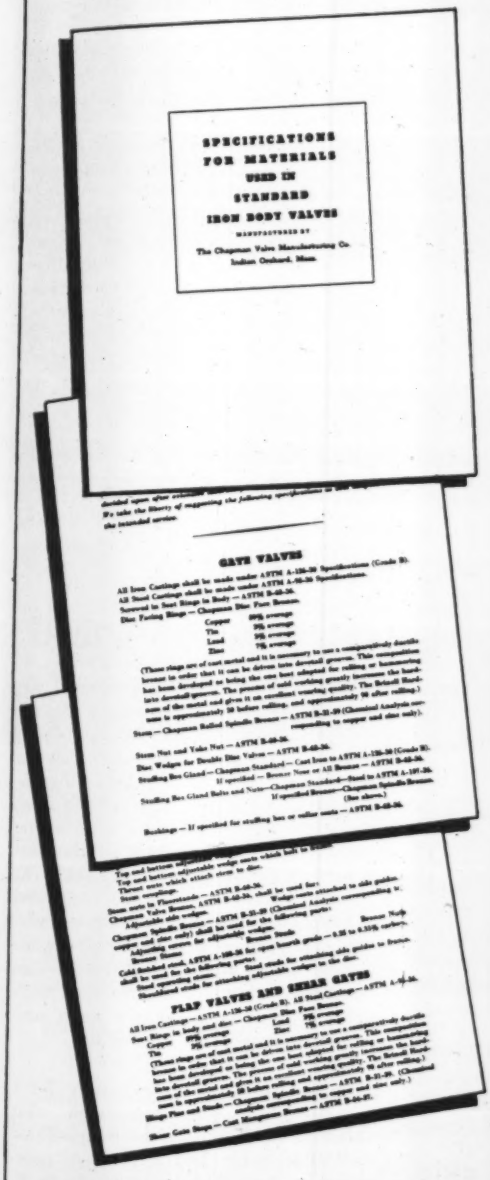
J. O. MARTINEAU has been appointed assistant chief engineer of the technical section of the Quebec roads department; ALPHONE GRATTON has been appointed assistant chief engineer for Montreal, and EUGENE PELLITIER assistant chief engineer for Quebec city.

CHESTER L. WILDER, of Lebanon, Pa., and BURTIS L. SLAYBAUGH, of Hanover, Pa., have begun new duties as project engineers with the Pennsylvania State Highway Department. JOHN W. LONG of Cressona, and REX C. NEWMAN, of Birchurdville, have resigned from their positions with the department.

GEORGE S. RICHARDSON of Pittsburgh, and ANDREW B. CRICHTON, of Johnstown, Pa., have been appointed members of the Pennsylvania state registration board for professional engineers by Gov. James. Richardson, for many years assistant bridge engineer of Allegheny County and more recently chief structural engineer of the Alle-

Chapman

recommends



SPECIFICATIONS FOR MATERIALS USED IN STANDARD IRON BODY VALVES

Many differing types of materials, intended for the same service, are continually found in specifications. Many of these are suitable for the service, but are *not adaptable* to manufacturing methods for some of the parts intended.

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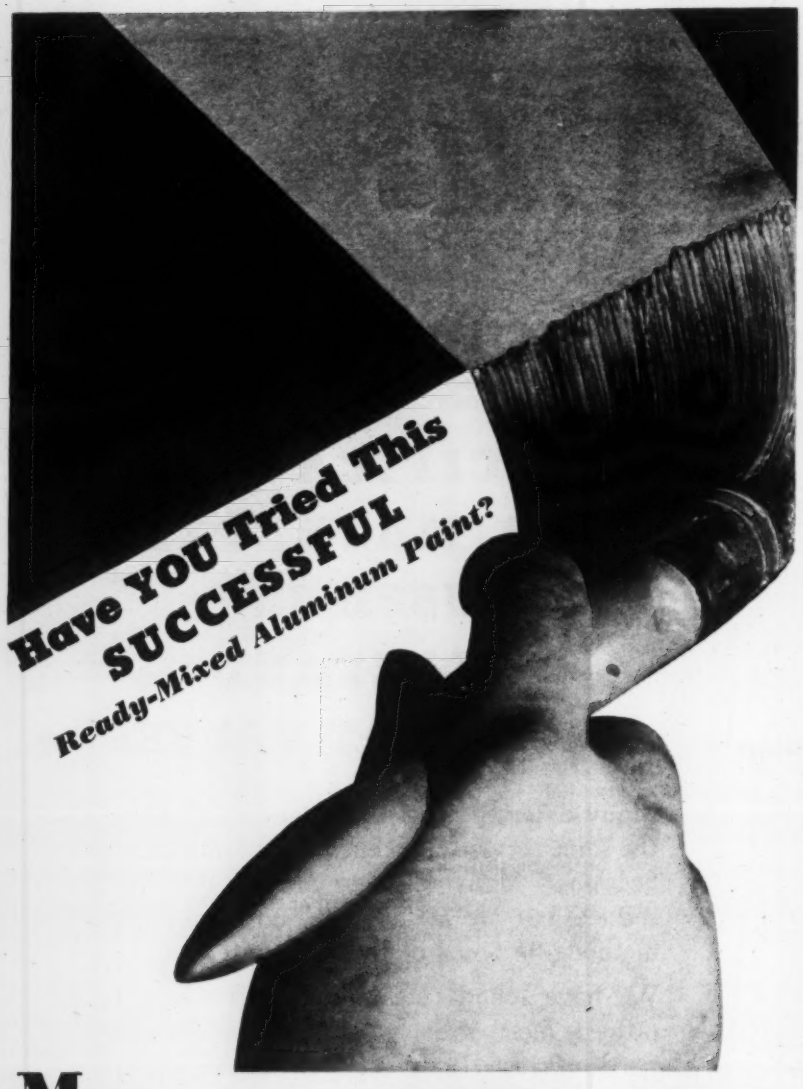

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gheny County authority, has within the past few months opened a consulting engineering office in Pittsburgh.

E. H. SCHNEIDER, Denver consulting engineer, is now in charge of all operations for the Yampa Valley irrigation district in central Colorado. Supervision of the construction of a large earthfill dam and hydraulic appurtenances will be part of his new work.

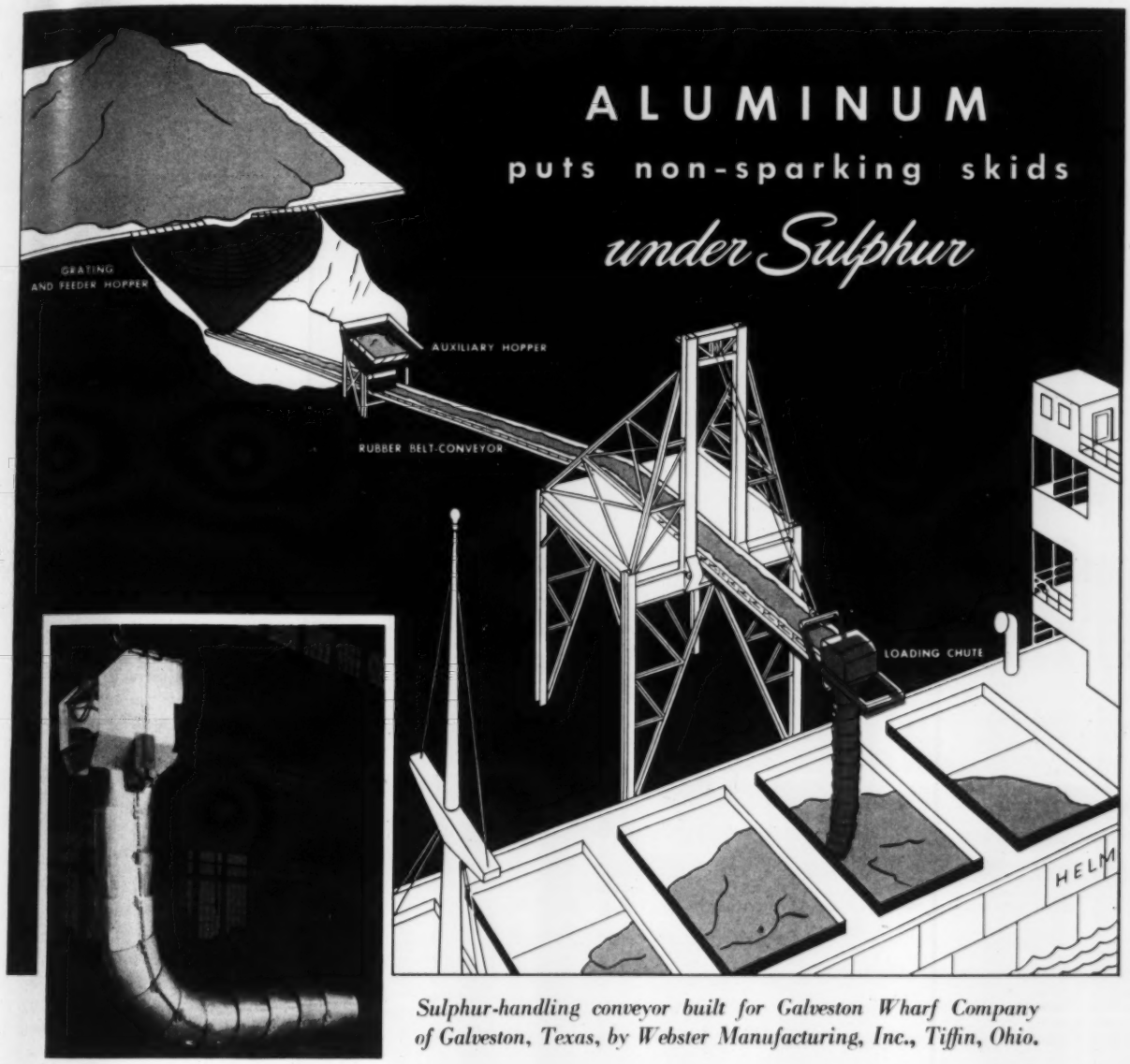
HOWARD LANE and BEN CAMP are now working with the U. S. Engineers on the construction of Caddoa Dam in southern Colorado, having resigned their positions as engineers with the Colorado State Highway Department.

WILLIAM L. STEELE of Omaha, Neb., has been elected chairman of the Nebraska state board of examiners for professional engineers and architects. ROY M. GREEN, of Lincoln and retiring chairman, has been elected secretary and D. L. ERICKSON, retiring secretary, has been named a member of the board.

BRUCE CLEAVENGER of Cuyahoga Falls, Ohio, has begun new duties as chief engineer of the Portage Lakes water supply system in Summit County to succeed FRANCIS W. STAFFORD, who resigned last January.

ALBERT S. HIBBS, division engineer for the city of Toledo on the Lake Erie water project, has been made manager of the Chillicothe, Ohio municipal waterworks to supervise construction of a water softening plant for that city. Hibbs went to Toledo from Akron where he had been assistant superintendent of the water supply department for eight years. Previous to that he spent eight years as head of the Cincinnati waterworks system. JESSE K. GIESEY of Buffalo, N. Y., has succeeded Hibbs as division engineer. Giesey, who was employed as resident engineer for a time with Fuller & McClintock Co., has more recently been resident engineer for Greeley & Hanson on a sewage treatment plant at Buffalo.

D. F. FELTON, Nebraska state WPA administrator, has announced that CHARLES H. BEAL has been appointed district manager and director of operations at Norfolk for District 1; D. P. DEBORD, district manager, and H. C. CUSACK, director of operations for District 2 with headquarters at Omaha; GEORGE W. WELSH, district manager for District 3 at Lincoln; O. L. SMITH, district manager and director of operations at Hastings for District 4, and G. E. BUCHANAN, district manager and director of operations at Alliance for District 5.



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A SERIOUS fire hazard has been eliminated in this sulphur-handling conveyor system. They have used Aluminum wherever the sulphur comes in contact with metal. And Aluminum is non-sparking.

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STANDARDIZE on the Genuine CROSBY CLIP

PERFECT GRIP • DROP FORGED STEEL • HOT DIP GALVANIZED

DEALERS WITH STOCK IN ALL PRINCIPAL CITIES

(News continued from page

MEN AND JOB

CHARLES F. SKIDMORE, of Marysville, Ohio, has been appointed resident engineer with the Ohio State Highway Department for Union County. Skidmore, former deputy Union County engineer, for the past year has been working for the highway department, being stationed in Division 6 with headquarters at Delaware.

LIEUT. COL. W. H. HOLCOMBE, who has been in charge of the U. S. Engineer Office at Milwaukee, is being transferred to Washington, D. C., and will be succeeded by COL. JOHN R. D. MATHESON, of the Washington, D. C., office.

HERBERT L. LINDENSMITH, civil engineer, has been made chairman of the Grimsby, Ont., water commission.

A. E. LINDAU, civil engineer of Chicago, is now in Hawaii making studies of concrete in connection with the new western Pacific air base work. A special problem being investigated is the effect of using coral for coarse aggregate and brackish mixing water for concrete for the Midway Island work, where other aggregate is not available in large quanties.

JOHN A. LANGENDORF, a draftsman in the bridge design office of the Wyoming State Highway Department since 1935, has accepted employment as junior engineer in the hydraulics laboratory of the U. S. Bureau of Reclamation office in Denver. Langendorf graduated with a civil engineering degree from the University of Wyoming in 1935.

STANLEY H. WRIGHT, formerly regional engineer and principal engineer with the Public Works Administration on detail to the management engineer, Federal Works Agency, has been assigned to the National Resources Planning Board and the Florida State Planning Board as co-ordinator for the Southeastern Florida Joint Investigation. His headquarters will be at West Palm Beach, Fla.

CLARENCE N. MORANG, formerly assistant engineer with the U. S. Engineers at Providence, R. I., is now working as associate engineer with the U. S. Forest Service, Department of Agriculture. He is stationed at Greenfield, Mass.

LAWRENCE COUEY, of Sedalia, Mo., has been appointed safety engineer for Division 4 of the Missouri State High-

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RPM DELO is available through distributors in more than 100 countries.

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Every ring was free—all oil rings unclogged. That alone prevented loss of power, high oil consumption, blow-by, piston and cylinder wear.

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Carbon formation was exceptionally low—and *no* hard carbon. Not a sign of scratching or scoring on pistons, rings, liners, etc.

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General Machinery Corporation finds this test "extraordinarily satisfactory". Prove New RPM DELO's cost-cutting, money-making performance for yourself—in any make or type of Diesel. You're passing up extra operating profits every day you don't!

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DIESEL ENGINE LUBRICATING OIL

New "RPM" Diesel Engine Lubricating Oil available everywhere in the gray barrel with the blue head

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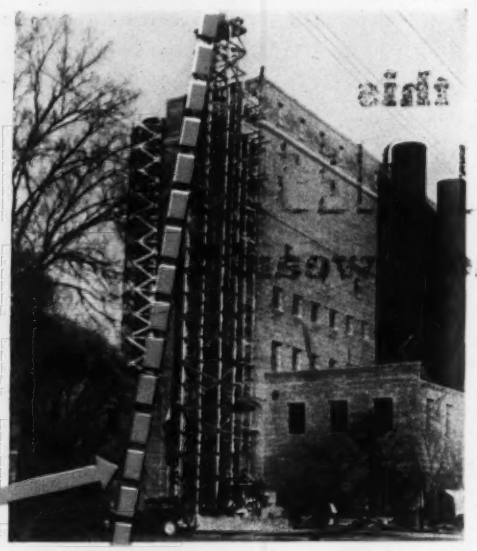

Recently built vomit stacks of this paper process sulphite mill are constructed of Wolmanized Lumber.

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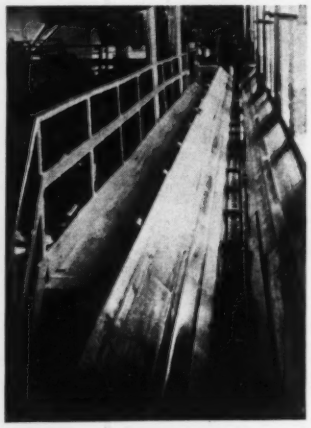
Paper mills, functioning in a sharply competitive industry, have to be constructed economically. Yet the structures must be enduring, because quantities of water and high humidities involved in the process create the severest service conditions.

Wolmanized Lumber meets these requirements. It is used not only for roof decking and floors, but also for many parts of the handling and processing equipment.

The same principle applies to problems you encounter. Wolmanized Lumber is being used for all types of construction, from highway bridges to dwelling houses. The varied applications are fully discussed in the free booklet, "Wood Preservation." May we send you a copy? AMERICAN LUMBER & TREATING COMPANY, 1435 Old Colony Building, Chicago.

*Registered Trade-mark



Because it's clean, and safe against damage by decay and termites, Wolmanized Lumber is used for often-wetted mill equipment, such as these pulp wood conveyors operated by Consolidated Water Power and Paper Co.

WOLMANIZED LUMBER

way Department to be stationed at Jefferson City.

CECIL ROBERTSON, who graduated from the Missouri School of Mines in 1938 with a civil engineering degree, has joined the staff of the Cotton Belt R. R. at Pine Bluff, Ark. For a time Robertson was employed with E. B. Badger & Sons, St. Louis.

C. R. HOIDAL, engineer with the Bureau of Reclamation at the Denver office, has resigned to accept a position with the Panama Canal Commission. Hoidal spent five years with the Reclamation Service.

C. W. KRUSE, a graduate of the Missouri School of Mines and Metallurgy in Civil Engineering in 1934 and since then connected with the Tennessee Valley Authority, is now on leave of absence taking special work at Harvard University in public health engineering. He will return to TVA following the necessary work for a master's degree.

HARRY W. ALCORN, who has been acting as consulting engineer for the city of Barberton, Ohio, since Feb. 29 when he retired as city engineer after 38 years, is now ending his connection with the city. HARRY D. BUSHEY took over Alcorn's old job as city engineer.

HOMER BEALL STOKES, formerly with E. B. Badger & Sons, St. Louis, is now working with the WPA at Farmington, Mo., as a civil engineer. Stokes graduated from Missouri School of Mines in 1938.

W. W. BRASWELL, in charge of construction of a $200,000 municipal building being built at Thomasville, Ga., with federal aid, has been appointed city engineer at Thomasville. Braswell has had a varied experience in drainage, sanitation and construction work.

C. S. EIDSON, superintendent of distribution for the Charleston, S. C., waterworks department, has begun new duties as waterworks superintendent at Waycross, Ga. Eidson is a graduate of Citadel with the class of 1935. Eidson's old position will not be filled for a time, according to J. E. GIBSON, superintendent at Charleston.

LIEUT. COMDR. EIGIL L. HANSEN, civil engineering corps, U. S. Naval Reserves, Fredericksburg, Va., has been ordered to do temporary active duty at the Pearl Harbor, Hawaii submarine base.

J. C. MURPHY, Baton Rouge, La., has been named chairman of the Louisiana state licensing board for general contractors. J. W. TAYLOR of New

(Continued on p. 120)

and forget it

Lock Joint Pipe has

water tight expansion joints

The measured average leakage on all Lock Joint lines is well below the allowable—convincing proof of the efficiency of the joints. Sufficient expansion and contraction is permitted at each joint to allow deflections due to extreme changes in temperature and normal earth movements.

This results in a

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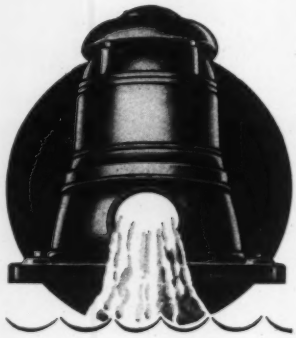
Check back over your water production cost for the past few years. Unless your figures are exceedingly low, you are operating under a profit robbing cost burden.

The newest design Layne Wells and Pumps produce water at a new low figure—thus giving a decided bargain in water cost. Your present system can be modernized, stepped up in quantity of production and stepped down in cost per thousand gallons. Hundreds of cases are on record where Layne Wells and Pumps are saving big sums each year for their owners.

Any City, Factory, Paper Mill, Oil Industry, Railroad, Irrigation, or other business official, may secure a complete file of bulletins, catalogs and folders on Layne Well Water Systems, without obligation, by addressing,

LAYNE & BOWLER, INC.
Dept. C, Memphis, Tenn.



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FOR MUNICIPALITIES • INDUSTRIES • RAILROADS • MINES AND IRRIGATION

Iberia, has been named a member of the board to succeed LEONARD SPINKS, of Tangiphonoa parish.

CHARLES H. THOMPSON, retired architect, Little Rock, Ark., and chairman of the Arkansas State Planning Board, has resigned to be succeeded by JAMES H. PENICK.

R. L. WALTERS has replaced HERBERT GORDON as maintenance superintendent of highways in Rogers and Nowata counties, Okla., for the Oklahoma State Highway Department.

LEONARD A. WAGNER, of Washington, D. C., and formerly assistant superintendent for the McArthur Concrete Pile Corp., Foundation engineers and contractors, has been engaged by the Safeway Stores, Inc., Oakland, Calif. Wagner will act as construction superintendent for three large manufacturing plants in Washington, D. C.

LIEUT. COL. W. E. R. COVELL, district engineer for the last four years at the Pittsburgh office, U. S. Engineers, is now leaving the army after 29 years of service to begin new duties May 31 as assistant to the general manager of Crossett-Watzek-Gates. Colonel Covell has been directing a $50,000,000 flood control program in western Pennsylvania for the army engineers. Tygart, Tionseta and Crooked Creek dams have been completed under his direction and Mahoning and Loyalhanna dams have been started.

W. O. MARRIOTT of Cedar Falls, Iowa, and resident engineer with the PWA, has resigned to accept a position with the Ornamental Stone Works, Des Moines, Iowa, as salesman and engineer.

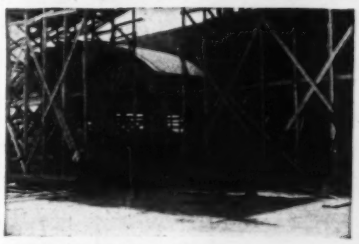
M. C. HINDERLIDER, state engineer of Colorado, is working with A. C. TILLEY, state engineer of Nebraska, and GEORGE KNAPP, state engineer of Kansas on a proposed water contract for the three states they represent.

THOMAS M. ZIMMERMAN, PWA engineer, the Harrisburg, Pa., district since 1934, has been furloughed in the curtailment of PWA activities in that district.

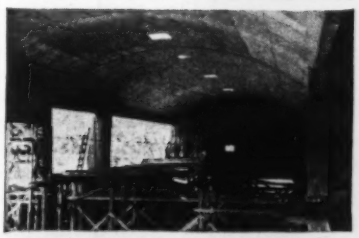
E. W. BLOM, assistant engineer of estimates and contracts for the past ten years of the Iowa State Highway Commission, April 1 began new duties as assistant city manager at Ames, Iowa, replacing CARROLL MCCARTHY, who has been named city manager of Webster City, Iowa. Blom has been with the Highway Commission for over eleven years. As a sideline, he has been acting as construction news correspondent for *Engineering News-Record*, work he plans to continue.

A NEW AND GREATER SOUTH IN THE MAKING

(1) Armstrong Tire & Rubber Co. plant, Natchez, Miss. Main factory, 160 x 760 ft., office building, power plant. Architectural concrete exterior; reinforced concrete Z-D barrel-shell roof.



(2) Wooden trusses on movable scaffolding supported the curved plywood forms for the barrel-shell roof slabs. A stiff Lone Star mix worked into place easily, helping to assure clean exposed surfaces.



(3) The Z-D roof, with its semi-circular barrels, permits hot air to rise to the center of each barrel, where it is drawn off by motor-driven ventilators.

(4) Z-D type roof permits spacing of columns on 50' centers, instead of 20' centers, usual with flat-slab roof construction; larger areas free from obstruction facilitate plant layout.

NEW ARMSTRONG TIRE FACTORY AT NATCHEZ TYPIFIES SOUTH'S PROGRESS

FIRE-SAFE, PERMANENT LONE STAR CONCRETE STRUCTURE . . . AT ATTRACTIVELY LOW COST

TYPICAL of the South's steady industrial progress is the new reinforced concrete plant of Armstrong Tire & Rubber Co., at Natchez, Miss., built throughout with Lone Star Cement. Expressive also of sound planning and the inherent economies of concrete is the fact that this new factory provides 188,000 sq. ft. of usable floor area at a low unit cost of $1 per sq. ft. Roberts & Schaefer Co., Chicago, engineers; J. T. Canizaro, Jackson, Miss., architect; B. L. Knost, Pass Christian, Miss., general contractor.

One of the features of this new plant is its Z-D barrel-shell roof construction, which does away with trusses and braces and facilitates plant layout by providing large areas, free from obstruction.

Lone Star Cement was selected on its outstanding performance record ever since 1900. It pays to figure every job with both Lone Star Cement and 'Incor' 24-Hour Cement. Use 'Incor'* where dependable 24-hour service strength shows a net saving. Elsewhere, use Lone Star. You gain either way—because better cement makes better concrete. Write for copy of "Cutting Concrete Costs." Lone Star Cement Corporation, Room 2282, 342 Madison Avenue, New York.

*Reg. U. S. Pat. Off.

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•

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PRESSURE PIPE

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NEW ENGINEERING BOOKS

(*Continued from p. 78*)

PROCEEDINGS—42nd Annual Meeting, American Society for Testing Materials, 1,334 pp. May be obtained from the Society, 260 S. Broad St., Philadelphia, Pa.

DESIGN AND CONSTRUCTION OF AIR-RAID SHELTERS—In accordance with the Civil Defense Act, 1939. 86 pp. Published by Concrete Publications, Ltd., 14 Dartmouth St., London, S.W. 1, England. Price 8s 6d plus postage.

MECHANICS OF LIQUIDS—By Ralph W. Powell. 271 pp. Published by The Macmillan Co., 60 Fifth Ave., New York City. Price $3.50.

HYDRAULIC FEATURES OF THE NILE FLOOD OF 1938—May be obtained from the Government Press, Cairo, Egypt.

CENSIMENTO DELLA CIRCOLAZIONE LUNGO LE STRADE PROVINCIALI—1938. 725 pp. Published by the Ministero Dei Lavori Pubblici, Rome, Italy.

REPORTS AND PAMPHLETS

THE ENGINEERING FOUNDATION—A Report on 25 Years of Service.

GERMAN-ENGLISH GLOSSARY FOR CIVIL ENGINEERING—Circular Series No. 40. May be obtained from the Engineering Experiment Station, University of Illinois, Urbana, Ill. Price 45c.

SICK ABSENTEEISM IN INDUSTRY—Air Hygiene Foundation of America, Inc., Pittsburgh, Pa.

LAMINAR FLOW OF SLUDGES IN PIPES WITH SPECIAL REFERENCE TO SEWAGE SLUDGE—Bulletin No. 319. May be obtained from the Engineering Experiment Station, University of Illinois, Urbana, Ill. Price 65c.

DEPRECIATION PRINCIPLES AND METHODS—Published by The State Law Reporting Co., 30 Vesey St., New York City. Price $1.50.

SYMPOSIUM ON SHEAR TESTING OF SOILS—Reprint from *Proceedings*, American Society for Testing Materials, 260 S. Broad St., Philadelphia, Pa.

TESTS OF 28-FOOT SPAN ALUMINUM ALLOY TRUSSES—Technical Paper No. 3. Published by the Aluminum Co. of America, Pittsburgh, Pa.

FLOOD PLAIN ZONING AND EVACUATION—Reprinted by Conference of Special Risk Underwriters, 85 John St., New York City.

SAFETY FOR YOUR COMMUNITY—Prepared by the Ohio Department of Highways, Division of Traffic and Safety, Columbus, Ohio.

Contract Unit Bid Prices

Selected list of 95 projects showing how contractors bid in 1939-1940

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STEVENS DAM, WASHINGTON

OWNER: U. S. Engineer Office, Central Building, Seattle, Wash. Col. L. E. Atkins, district engineer.

PROJECT: Construction of Stevens (Mud Mountain) rolled-earth fill dam on White River, 6 miles east of Enumclaw, Wash., 47 miles from Seattle. Dam to be about 400 ft. high, with overflow spillway 300 ft. wide. Includes 23-ft. diameter concrete-lined tunnel 2000 ft. long with trashracks, penstocks and valves; and 9-ft. diameter tunnel 1800 ft. long.

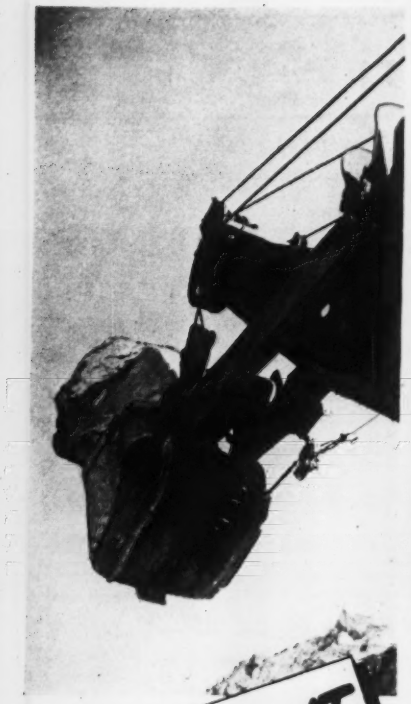
CONDITIONS: Dam to be built in narrow canyon with little room for working operations. Surveyors at site were lowered into canyon in cage in order to map area. Spring floods add to working hazards. Work to be completed by Nov. 15, 1942. Rail and highway transportation available. All materials to be furnished by contractor. Wage rates: skilled, $1.85 per hr.; semi-skilled, $1.25 per hr.; and common, 90c. per hr.

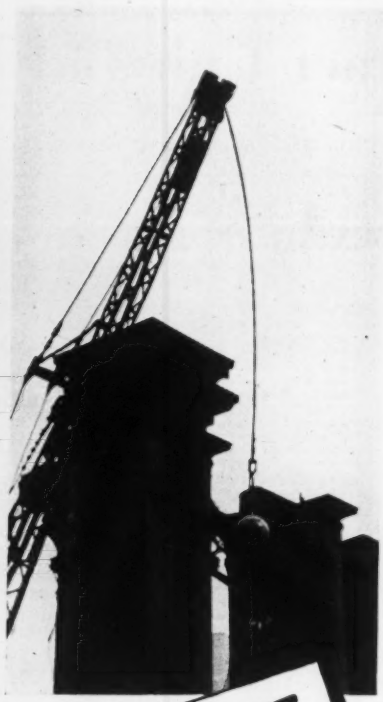
BIDS: Two bids were received August 21, 1939, the contract low of $5,344,605, and $7,270,390.

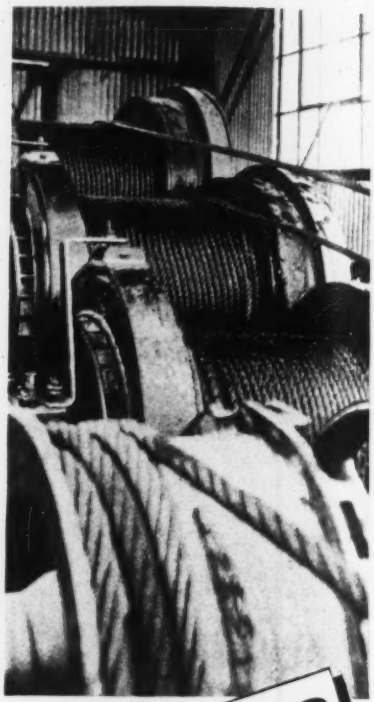
LOW BIDDERS:

1. G. F. Atkinson, San Francisco, Calif. $5,344,605
2. Columbia Constr. Co., Westport, Wash. 7,270,390

Item	Quan.	Unit Prices (1)	(2)
1. Divers., care of river	L.S.	$98,000.00	$145,000.00
2. Divers., care of drainage	L.S.	2,500.00	5,000.00
3. Excav. common	210,000 c. y.	1.00	1.50
4. Excav. riverbed	80,000 c. y.	.70	1.80
5. Excav. spillway	1,140,000 c. y.	.75	.45
6. Excav. borrow	3,450,000 c. y.	.20	.47
7. Excav. tunnel portals	7,500 c. y.	2.00	4.00
8. Excav. trenches	2,600 c. y.	2.25	10.00
9. Excav. rock tunnel portals	25,000 c. y.	2.00	6.25
10. Excav. rock riverbed	30,000 c. y.	1.50	6.25
11. Excav. rock canyon walls	30,000 c. y.	3.00	6.25
12. Excav. rock spillway	3,000 c. y.	3.00	5.25
13. Excav. rock trenches	600 c. y.	8.00	12.50
14. Excav. rock 23-ft. tunnel	45,000 c. y.	14.00	11.00
15. Excav. rock 9-ft. tunnel	8,000 c. y.	14.00	25.00
16. Tunnel protection	200 M.bm.	100.00	200.00
17. Rolled fill	2,275,000 c. y.	.24	.30
18. Dumped fill	660,000 c. y.	.20	.25
19. Additional rolling	400,000 s. y.	.025	.01
20. Compacted backfill	300 c. y.	5.00	12.00
21. Compacted spillway	100 c. y.	4.00	6.00
22. Dumped riprap	38,000 c. y.	3.50	3.25
23. Hand-placed riprap	1,000 c. y.	10.00	14.00
24. Derrick stone	28,000 c. y.	4.00	4.50
25. 4-inch spillway drains	9,000 l. f.	.90	1.65
26. 8-inch spillway drains	4,400 l. f.	1.40	2.50
27. 10-inch spillway drains	500 l. f.	2.00	3.50
28. 14-inch spillway drains	150 l. f.	3.00	4.50
29. Grout tunnels, canyon wall	2,150 c. y.	1.00	1.00
30. 2-inch drill holes	2,800 c. y.	1.00	4.00
31. Pressure grouting	7,000 c. f.	2.50	4.50
32. Line drilling	5,000 s. f.	2.00	.80
33. Concrete walls, backfill	1,540 c. y.	16.00	30.00
34. Concrete tunnel portals	1,240 c. y.	12.00	40.00
35. Concrete intake	1,200 c. y.	40.00	45.00
36. Concrete valve house	100 c. y.	35.00	50.00
37. Concrete tunnel plug	2,500 c. y.	18.00	20.00
38. Concrete penstock	400 c. y.	16.00	35.00
39. Concrete spillway	26,000 c. y.	16.00	15.00
40. Concrete 23-ft. tunnel	12,000 c. y.	16.00	19.00
41. Concrete 9-ft. tunnel	3,000 c. y.	20.00	25.00
42. Concrete shafts	1,000 c. y.	24.00	40.00
43. Copper stops	20,500 l. f.	.90	1.50
44. Reinforcing steel	2,800,000 lbs.	.045	.065
45. Steel penstocks	2,800,000 lbs.	.08	.135
46. Steel trashracks	115,000 lbs.	.08	.14
47. Steel rails	800,000 lbs.	.035	.065
48. Misc. metal	35,000 lbs.	.20	.33
49. Cast steel conduits	163,000 lbs.	1.25	.23
50. Steel lining, 9-ft. tunnel	360,000 lbs.	.10	.15
51. Slide gate	1 ea.	2,000.00	3,000.00
52. Valves and equipment	3 ea.	32,500.00	45,000.00
53. Radial gate	1 ea.	9,000.00	15,000.00
54. Valve house equipment	L.S.	1,000.00	2,000.00
55. Class C concrete	150 c. y.	50.00	120.00
56. "A" cement mortar	2,000 c. f.	4.00	12.00
57. "B" cement mortar	150 c. f.	8.00	32.00
58. 24-inch cast iron valve	1 ea.	1,200.00	2,000.00
59. 10-inch cast iron valve	1 ea.	200.00	300.00
60. Cast iron fittings	6,000 lbs.	.15	.50
61. Fishway grill	500 c. f.	.60	1.00
62. Fishway timber lining	3 M.bm.	150.00	225.00
63. Fishway baffles	8 M.bm.	200.00	300.00
64. Test pits, 0 to 20-ft.	1,000 l. f.	10.00	25.00
65. Test pits, 20 to 40-ft.	500 l. f.	12.50	30.00
66. Test pits, over 40-ft.	500 l. f.	15.00	40.00







. . . Bethlehem Purple Strand

Match Bethlehem Purple Strand rope against the best rope you've used. Dig with it. Lift with it. Destroy foundations with it. And then compare Purple Strand, dollar for dollar, yard for yard with your present rope.

Here's why we believe Purple Strand will deliver the goods:

Purple Strand is built of special premium-priced steel. The wires are tough, exact in size, fit together like a watch. And the whole rope is fully lubricated from core to crown for corrosion-resistance, wear-resistance, and lasting strength.

The original cost of Purple Strand is slightly higher than that of ordinary wire rope. But it's a mighty worthwhile extra. Rope trouble can hold up a fleet of trucks that will off-set this slight premium in a matter of minutes.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

FRANKLIN FALLS DAM
NEW HAMPSHIRE

OWNER: U. S. Engineer Office, Boston, Mass., Col. A. K. B. Lyman, District Engineer.

PROJECT: Construction of Franklin Falls Dam on Pemigewasset River, a tributary of the Merrimack River (Merrimack Valley Flood Control), about 2½ miles north of Franklin, Merrimack County, N. H. Flood control dam to be of rolled-earth and rock-paved type, about 1,700 ft. long at top, with maximum height above stream bed of 130 ft. Top width 35 ft. Embankment to be constructed of selected compacted pervious materials from required structure and channel excavation and from borrow areas, with dumped rock shell and toe, and will have an impervious compacted core and upstream blanket. Spillway channel cut in earth and rock with gravity-type Ogee control section 550 ft. long, on west bank of river. Outlet works consist of concrete intake structure, twin horseshoe-shaped concrete conduits, concrete-lined stilling basin, and operating house. Approach and discharge channels to be excavated. Eight service gates and two emergency gates with operating mechanisms to be installed in control structure. Road across dam and steel truss bridge provide access to operating house.

CONDITIONS: Contractor to furnish all materials and complete project by June 30, 1942. Transportation facilities include first class highway, and abandoned branch line of Boston and Maine Railroad, which with minor repairs can be made usable. Wage rates specified are: skilled, $1.00 to $2.00 per hr.; semi-skilled, 50c. to $1.00; and common, 45c. per hr.

BIDS: Eight bids were opened August 9, 1939, ranging from the contract low of $4,265,853 to $5,456,960. Engineer's estimate $4,638,183.

LOW BIDDERS:

1. Coleman Bros. Corp., Boston, Mass. (contract) $4,265,853
2. B. Perini & Sons, Inc., Framingham, Mass. 4,375,134
3. Arthur A. Johnson Corp., Necaro Co., Inc., Long Island City, N. Y. 4,602,000

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Field office	L.S.	$28,000.00	$15,000.00	$20,000.00
2. Remove existing struct	L.S.	15,000.00	1,000.00	2,500.00
3. Divert river; pump cofferdam	L.S.	100,000.00	150,000.00	310,000.00
4. Strip damsite	250,000 c. y.	.50	.35	.37
5. Common excav. above El. 301	1,887,000 c. y.	.22	.35	.24
6. Common excav. below El. 301	739,000 c. y.	.33	.35	.45
7. Stripping borrow Areas A, B, C	215,000 c. y.	.50	.20	.30
8. Excav. and haul, borrow area A	300,000 c. y.	.42	.60	.57
9. Same, borrow area B	550,000 c. y.	.22	.20	.22
10. Same, borrow area C	185,000 c. y.	.26	.25	.24
11. Rock excav., above El. 301	315,000 c. y.	1.65	1.75	1.45
12. Rock excav., below El. 301	75,000 c. y.	5.50	1.75	2.25
13. Struct. backfill, uncompacted	10,600 c. y.	.13	.60	.10
14. Struct. backfill, compacted	12,700 c. y.	.35	.75	.12
15. Rolled fill, pervious	1,952,000 c. y.	.07	.12	.12
16. Rolled fill, impervious	300,000 c. y.	.08	.14	.12
17. Rock fill	575,000 c. y.	.15	.40	.40
18. Hand-placed riprap	13,200 c. y.	3.00	1.32	2.15
19. Derrick stone	2,600 c. y.	3.50	3.40	1.85
20. Gravel, filters and backing	115,000 c. y.	1.00	1.00	1.77
21. 8-in. gravel drain	7,700 l. f.	1.00	.60	.65
22. Sand for filters	81,000 c. y.	.75	.80	1.15
23. Line drilling, rock excav	68,000 s. f.	1.50	.40	.50
24. Drill holes, rock; pres. grout	5,700 l. f.	1.00	.50	.35
25. Same, for grouting anchors	3,000 l. f.	.50	.75	.85
26. Pressure grouting	2,300 c. f.	1.00	1.00	.95
27. Furnishing cement	87,000 bbl.	2.40	3.00	2.70
28. Conc., intake struct., cond. transition, bridge piers	18,000 c. y.	8.50	11.00	10.00
29. Concrete in conduits	8,800 c. y.	18.00	11.00	10.00
30. Conc. in outlet apprch. channel walls, spillway walls, weir	29,500 c. y.	8.50	7.00	6.00
31. Concrete in bridge deck	90 c. y.	20.00	22.50	22.00
32. Conc. in steps, trash bars, grout recesses, and misc. wk.	1,200 c. y.	18.00	10.00	8.00
33. Conc. in stilling basin	18,500 c. y.	9.00	7.00	9.00
34. Reinforcing steel	2,051,000 lb.	.03	.04	.04
35. Service bridge metal	168,000 lb.	.07	.10	.07
36. Wr. iron and steel trash bars	169,000 lb	.14	.10	.20
37. Cast iron conduit liners	624,000 lb.	.08	.09	.12
38. Water level recorder sys	L.S.	3,000.00	1,500.00	4,000.00
39. Sheet metal	14,000 lb.	.14	.20	.19
40. Miscellaneous metal	105,000 lb.	.11	.12	.12
41. Copper water stops	6,000 lb.	.50	.30	.50
42. Hand-rail, stilling basin	300 l. f.	3.50	3.50	3.45
43. Service bridge railing	L.S.	3,000.00	3,500.00	7,000.00
44. 18-in. corr. iron pipe	270 l. f.	4.00	2.00	3.60
45. Piezometers, settlement gages, observ. and auxil. wells	L.S.	20,000.00	5,000.00	16,000.00
46. Tile gages	120 l. f.	5.00	5.00	4.50
47. Operating house superstr	L.S.	50,000.00	50,000.00	95,000.00
48. Gates, guides and hoists	L.S.	150,000.00	150,000.00	195,000.00
49. Crane	L.S.	10,000.00	10,000.00	15,000.00
50. Gasoline-elec. generator set	L.S.	4,000.00	4,000.00	8,000.00
51. Misc. oper. hse. equip. and piping	L.S.	5,000.00	6,000.00	9,000.00
52. Electr. conduit and supports	L.S.	4,500.00	4,000.00	7,000.00
53. Elect. power and lighting sys.	L.S.	8,000.00	7,000.00	16,000.00
54. Gravel surface, roadway	8,000 s. y.	.50	.35	.60
55. Bitum. surface. treat'mt, roadway	6,000 gal.	.13	.20	.14
56. Highway guard rail	5,000 l. f.	.70	.90	.60
57. Cobble gutters	2,300 l. f.	1.00	.80	.80
58. 12-in. pipe drains	170 l. f.	2.00	1.00	1.32
59. Top soil	25,000 c. y.	.25	.75	.55
60. Seeding	30 ac.	200.00	200.00	300.00

SANTEE DAM
SOUTH CAROLINA

OWNER: South Carolina Public Service Authority, Charleston, S. Car.; Harza Engineering Co., Chicago and Charleston, engineers.

PROJECT: Constructing Santee Dam across Santee River and Santee Swamp at Wilson Landing, eighteen miles south of Manning and fifty miles north of Charleston, S. Car. It will be approximately 8 miles in length, extending in general north-south direction across Santee Swamp. Project includes construction of rolled fill South Dam and entrance road, dredger fill North Dam and river closure, reinforced concrete spillway dam, fabrication and installation of spillway gates, and railroad construction and operation.

CONDITIONS: Contractors to complete work in 450 days, and furnish all materials except cement, which will be furnished by owner. Highway and rail transportation facilities available, with possibility of water facilities being available later. Wage rates are: skilled, $1.00 to $1.50 per hr.; semi-skilled 50c. to $1.00 per hr.; and common labor on heavy construction, 40c. per hr.

BIDS: Bids were asked August 29, 1939 on Schedule 1, South Dam; Schedule 2, North Dam; Schedule 3, spillway dam; Schedule 4, spillway gates; Schedule 7, combination of all the above; Schedule 5, spillway dam and gate combination; Schedule 6, combination of Schedules 5 and 2; Schedule 8, railroad construction; and Schedule 9, operation of railroad. Contracts awarded for Schedules 1 through 4 separately. Contracts for Schedule 8 and 9 not to be let at this time. Bids on Schedule 1, five bidders, range from the contract low of $170,944 to $197,230; five bids on Schedule 2, from $2,420,265 to $3,516,628; five bids on Schedule 3, from $3,081,690 to $4,108,295; and on four bids on Schedule 4, from $222,500 to $264,245.

SCHEDULE 1—SOUTH DAM AND ENTRANCE ROAD

LOW BIDDERS:

1. W. C. Sheperd, Atlanta, Ga. (contract) $170,944
2. E. W. Grannis, Fayetteville, N. Car. 171,185
3. C. G. Fuller, Barnwell, S. Car. 183,515

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing, Class B	310 ac.	$20.00	$40.00	$75.00
2. Overburden drill. 2½-in. casing	200 l. f.	1.00	1.00	1.50
3. 2-in. soil samples	40 ea.	4.00	5.00	1.00
4. 6-in. auger holes	150 l. f.	1.00	2.00	1.00
5. Auger hole soil samples	45 ea.	4.00	5.00	1.50
6. 2½-in. casing, left in place	50 l. f.	.50	1.00	.75
7. 1¼-in. pipe and well points	60 l. f.	4.00	2.00	.50
8. Stripping	110,000 c. y.	.16	.14	.18
9. Borrow for rolled fill	530,000 c. y.	.19	.19	.18
10. Adjustment each add'l. or lesser roll	460,000 c. y.	.0015	.0015	.0015
11. Earth dike embankment	80,000 c. y.	.17	.15	.18
12. Roll, finish earth fill	460,000 c. y.	.02	.02	.02
13. Topsoil and seeding	18 ac.	450.00	200.00	200.00
14. Roadway excavation	40,000 c. y.	.225	.28	.30
15. Corr. rdway. culverts	35,000 lb.	.14	.14	.13
16. Credit for use St. Stephens Railroad	L.S.	1.00	.....	.....

SCHEDULE 2 — NORTH DAM AND RIVER CLOSURE

LOW BIDDERS:

1. Wilbanks & Pierce, Inc., Greenville, Miss. (contract) $2,420,265
2. Construction Aggregates Co., Chicago, Ill.. 2,426,390
3. W. E. Callahan Constr. Co., Dallas, Tex. 2,526,630

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing after logging	260 ac.	$367.00	$285.00	$190.00
2. Clearing virgin timber	260 ac.	331.00	270.00	230.00
3. Clear and deliv. merch. timber	260 ac.	452.00	440.00	330.00
4. Overburden drill., 2½-in. casing	2,500 l. f.	2.75	1.25	2.90
5. 2-in. soil samples	500 ea.	2.50	1.00	3.00
6. 6-in. auger holes	500 l. f.	2.00	.50	3.00
7. Auger hole soil samples	150 ea.	2.00	1.00	2.00
8. Test pits	30 l. f.	10.00	10.00	18.00
9. Test pit samples	10 ea.	1.50	2.50	5.00
10. 2½-in. casing, left in place	300 l. f.	1.00	.40	.40
11. 1½-in. pipe and well points	400 l. f.	1.75	.30	2.90
12. Roadway excavation	20,000 c. y.	.47	.30	.38
13. Corr. rdway. culv	56,000 lb.	.20	.25	.16
14. Stripping	1,750,000 c. y.	.2932	.30	.32
15. Foundation backfill	15,000 c. y.	.32	1.50	1.40
16. Dredger borrow	8,500,000 c. y.	.1492	.1732	.175
17. Steel sheet piling, 22#/s.f.	29,000 s. f.	.855	1.25	1.55
18. River closure	L.S.	170,000.00	45,000.00	100,000.00
19. Earth dike embankment	4,000 c. y.	.27	.25	.35
20. Seeding	95 ac.	200.00	210.00	300.00
21. Settlement indicators, well points	12 sec.	350.00	350.00	650.00
22. Toe drains	15,000 c. y.	6.25	3.00	5.60
23. Credit, removal logging RR.	L.S. (cr.)	4,000.00	24,000.00	25,000.00
24. Credit, use of St. Stephens RR	L.S. (cr.)	5,000.00	4,000.00	7,500.00

SCHEDULE 3 — SPILLWAY DAM

LOW BIDDERS:

1. McCarthy Improvement Co., Davenport, Iowa (contract) $3,081,690
2. J. B. Britton & C. G. Fuller, Barnwell, S. Car. 3,415,093
3. United Construction Co., Winona, Minn.... 3,435,770

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing Class A	75 ac.	$90.00	$400.00	$600.00
2. Overburden drill, 2½-in. casing	3,000 l. f.	3.00	1.00	2.50
3. 2-in. soil samples	200 ea.	5.00	1.00	3.00
4. Excavation	710,000 c. y.	.55	.58	.20
5. Foundation trimming	54,000 s. y.	.50	.25	3.00
6. Foundation refill	12,000 c. y.	.75	1.00	1.00
7. Use of tractor	300 hr.	3.50	5.00	3.88
8. Gravel drains	17,500 c. y.	3.60	5.00	4.00
9. Perfor. drain pipe	160,000 lb.	.18	.20	.22
10. Pumping	22,000 ac. ft.	1.40	6.00	3.67
11. Observation wells	125 ea.	15.00	20.00	25.00
12. Steel sheet piling, 22#/s.f.	145,000 s. f.	1.00	1.10	1.37
13. Steel sheet piling, 27#/s.f.	49,000 s. f.	1.15	1.40	1.97
14. Class B concrete	45,800 c. y.	11.15	12.25	7.00
15. Class C concrete	82,300 c. y.	10.78	11.25	7.00
16. Forms, straight	1,000,000 s. f.	.38	.30	.78
17. Forms, curved one way	11,000 s. f.	.80	.75	1.25
18. Reinforcing steel	7,900 ton	60.00	90.00	104.00
19. Steelwork	203 ton	130.00	200.00	200.00
20. Pipe and valves	400 lb.	2.00	.40	1.00
21. Metal conduit	15,300 lb.	.16	.30	.40
22. 2-in. non-metal. conduit	100 l. f.	.50	.40	.64
23. 4-in. non-metal. conduit	6,800 l. f.	.50	.40	.74
24. Copper grounds	150 lb.	.62	.40	.90
25. Copper water stops	4,700 lb.	1.00	3.35	1.75
26. Rubber water stops	3,700 l. f.	1.20	1.85	1.90
27. Lighting fixtures	L.S.	3,000.00	1,200.00	2,000.00
28. Timber crib	1,700 l. f.	10.00	5.00	7.60
29. Diversion closure	L.S.	10,000.00	30,000.00	54,712.19
30. Clearing, Class B	10 ac.	60.00	100.00	500.00
31. 6-in. auger holes	50 l. f.	2.00	1.00	2.00
32. Auger hole soil samples	15 ea.	5.00	1.50	1.50
33. 1½-in. pipe and well points	20 l. f.	2.00	2.00	1.20
34. Stripping	10,000 c. y.	.20	.20	.20
35. Borrow for rolled fill	120,000 c. y.	.20	.25	.25
36. Adjust. each add. or lesser roll	110,000 c. y.	.0015	.0015	.0015
37. Roll and finish earth fill	110,000 c. y.	.05	.04	.13
38. Topsoil and seeding	2 ac.	400.00	400.00	500.00
39. Tile and catch basin	L.S.	300.00	1,000.00	950.00
40. Steel pile interlock filler	130,000 l. f.	.10	.05	.04
41. Santee River trestle	L.S.	30,000.00	25,000.00	20,000.00
42. Medical, surgical care	L.S.	10,000.00	5,000.00	13,500.00
43. Credit, use of St. Stephens RR	L.S. (cr.)	108,000.00	150,000.00	160,288.77

SCHEDULE 4 — FURNISH AND INSTALL SPILLWAY GATES

LOW BIDDERS:

1. Virginia Bridge Co., Roanoke, Va. (contract) $222,500
2. Nashville Bridge Co., Nashville, Tenn..... 224,750
3. J. B. Britton & C. G. Fuller, Barnwell, S. Car. 244,000

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Fabr., furn., install 62 gates	L.S.	$224,000.00	$225,750.00	$243,000.00
2. Gate stoplog frame	1 ea.	4,600.00	4,000.00	4,000.00
3. Credit for use of St. Stephens R.R	L.S. (cr.)	6,100.00	5,000.00	3,000.00

FRIANT DAM, CALIFORNIA

OWNER: Bureau of Reclamation, Friant Division, Central Valley Project, California. R. F. Walter, Denver, Colo., chief engineer.

PROJECT: Constructing Friant Dam, near Friant, Calif., on San Joaquin River; concrete gravity type dam approximately 3,430 ft. long at crest and about 300 ft. high. Concrete cut-off wall in trench extends from left end of dam into abutment. Foundation rock to be drilled and grouted and drainage provided by drilled holes discharging through 6-in. pipes into grouting and drainage galleries. Concrete in dam divided into blocks or columns by means of vertical contraction joints. Grout pipes embedded in mass concrete, with outlets into contraction joints. Joints to be pressure grouted after concrete has cooled. Concrete to be cooled artificially by system of pipes. Spillway consists of ogee section in river channel. Flow of water over spillway controlled by drum gates. Two river outlets, and outlets for Friant-Kern and Madera Canals provided for. Wooden forms for exterior surfaces of dam which will be exposed permanently to be constructed of matched lumber lined with absorptive lining approximately ½-in. thick. This eliminates required rubbing of mortar into surface pitting.

CONDITIONS: Government to furnish cement; pumicite; absorptive form lining and nails; reinforcing bars; anchor bars, rods and bolts; metal inserts; cinch anchors; metal tubing; metal pipe, fittings and valves; handrail pipe and fittings; grouting units; drum gates and operating mechanisms; conduit castings; needle valves and discharge guides; bulkhead and coaster gates, frames and tracks; outlet pipes and supports; pipe for drains; gantry crane and track; trashrack metalwork; metal stairways and ladders; hatchways, manholes, floor plates, gratings and catch basin inlets; sealing materials; miscellaneous metalwork; electrical equipment; meters; paint and coating materials; and lubricants for permanent machinery. Work to be completed in 1,200 calendar days. Highway and railroad transportation facilities available. Wage rates on the project are: skilled labor, $1.00 to $1.50 per hr.; semi-skilled, 75c. to $1.12½; and common labor, 68¾c. to 90c. per hr.

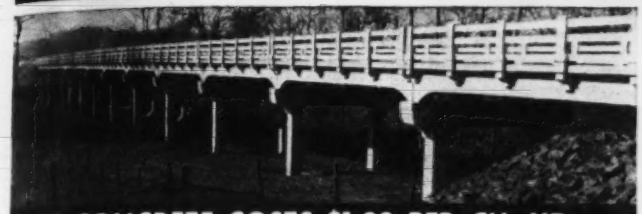
BIDS: Five bids were opened September 14, 1939, ranging from the contract low of $8,715,358 to $12,483,173.

LOW BIDDERS:

1. Griffith Co., Los Angeles, Calif. and Bent Bros., Inc., Los Angeles, Calif., (contract) joint bid $8,715,358
2. Shasta Constr. Co., San Francisco, Calif... 9,105,760
3. West Coast Construction Co., Inc., Los Angeles, Calif. 9,197,169

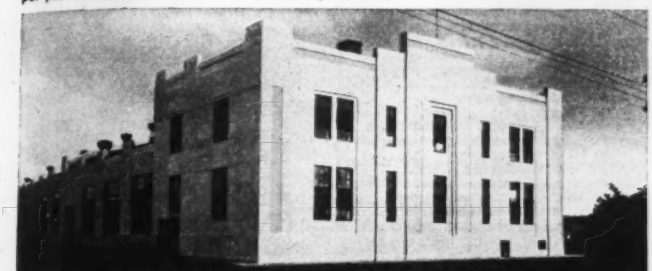
Item	Quan.	Unit Prices (1)	(2)	(3)
1. Diversion and care of river	L.S.	$115,000.00	$100,000.00	$20,000.00
2. Excav., strip, sand and grav. deposits	600,000 c. y.	.45	.08	.10
3. Excav., common, for dam, etc.	190,000 c. y.	3.00	2.50	3.50
4. Rock excav., dam, etc	580,000 c. y.	3.00	2.50	3.50
5. Rock excav., cutoff wall ftg.	200 c. y.	7.50	6.00	8.00
6. Drill line holes	32,000 l. f.	.25	.40	.40
7. Backfill	110,000 c. y.	.30	.45	.25
8. Compacting backfill	7,000 c. y.	.70	.70	1.50
9. Drill grout holes, to 25-ft.	14,000 l. f.	.50	1.30	.50
10. Drill grout holes, 25-50-ft.	13,500 l. f.	1.00	1.30	1.80
11. Drill grout holes, 50-100-ft.	23,000 l. f.	1.00	1.30	2.20
12. Drill grout holes, 100-200-ft.	1,000 l. f.	1.00	1.30	2.50
13. Pressure grouting	75,000 c. f.	1.00	1.50	.60
14. Drill drain. holes, to 25-ft.	1,300 l. f.	6.00	3.00	4.00
15. Drill drain. holes, 25-50-ft.	6,500 l. f.	6.00	3.00	4.50

Quicker Curing Concrete Cuts Costs



CUT CONCRETE COSTS $1.00 PER CU. YD.

VIRGINIA STATE HIGHWAY BRIDGE NEAR CULPEPPER, VA. *Contractors:* Blackwell Eng. & Cons. Co., Warrenton, Va. Quick curing in cool weather cut form stripping time to 3 days, reduced form sets required for 10—40 ft. spans from 8 or 10 to 2, and speeded completion by 16 days. Including labor and overhead, this cut concrete costs $1.00 per yd. In addition overhead costs were $300 less.



QUICK WINTER CURING—$2000 LOWER COST

POLK COUNTY GARAGE & OFFICE BLDG., BALSAM LAKE, WIS. *Architect:* E. F. Klingler, Amery, Wis. *Contractor:* James Johnson, Amery, Wis. Temperatures from −20° F. to 20° F. Quick curing with minimum heat protection allowed form stripping in 3 days to cut form costs in half—$500. Heat-curing costs were less by $600. Quicker completion saved $900, 60 days' salary for two supervisors.

$1000 LOWER COST—4 WEEKS' LESS TIME

HIGH SCHOOL ADDITION, JACKSON, MINN. *Architect:* Pass & Rockey, Mankato, Minn. *Engineer:* Rose & Harris, St. Paul, Minn. *Contractors:* McGough Bros., St. Paul, Minn. Quick curing concrete in floor slabs and other key portions permitted form stripping and re-use in 3 to 7 days, and cut four weeks from construction time. This cut form costs by $800, and overhead by $200.

$1800 SAVED BY QUICK SERVICE CONCRETE

SURGE TANK FOUNDATION, MILTON, VT. *Owner:* Public Electric Light Co., St. Albans, Vt., and Boston, Mass. *Engineer:* Chas. T. Main Co., Boston, Mass. *Contractor:* P. E. Sullivan, St. Albans, Vt. While building foundation, water-wheel shutdown required spending $600 per day for power. Quick curing concrete allowed waterwheel to resume power production in 48 hours instead of 5 days. This saved $1800—the cost of buying power for 3 days.

IN 24 to 48 hours Lehigh Early Strength Cement equals the strength of normal cement at 7 days. This quicker curing cuts costs, has other big advantages.

Reduces form costs by quick removal and re-use.

Heat-protection cost in cold weather is less by one-half to two-thirds.

Reduces time waiting for concrete to harden. Service strength three to five times faster.

Quick use of concrete helps coordinate schedules for practically continuous operation, shortens construction time, reduces overhead expense.

Helps make up delays to avoid penalty, sometimes earns bonus for earlier completion.

Produces better, denser concrete.

The illustrations are typical of everyday cases where Lehigh Early Strength Cement cuts costs. Use it for any concrete when time saving reduces costs, or when quicker completion is of advantage.

LEHIGH EARLY STRENGTH CEMENT

LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa., Chicago, Ill., Spokane, Wash.

16. Drill drain. holes, 25-75-ft.	13,000 l. f.	6.00	3.00	4.50
17. Drill holes for setting pipes	400 ea.	2.25	6.00	4.00
18. Drill holes, anchor and grout bar	3,700 l. f.	.70	1.75	1.50
19. Drill holes, uplift pipes	150 l. f.	2.25	2.00	1.50
20. Porous conc. drain tile	55,000 l. f.	1.00	1.00	.45
21. 12-in. split sewer pipe drains	3,000 l. f.	.25	.70	.70
22. 24-in. split sewer pipe drains	3,200 l. f.	.50	1.40	1.50
23. 36-in. split sewer pipe drains	400 l. f.	1.00	2.40	3.00
24. 6-in. drains, uncement. joints	900 l. f.	.50	.40	.70
25. 12-in. drains, uncement. joints	950 l. f.	1.00	.70	1.00
26. 18-in. drains, cemented joints	400 l. f.	1.00	1.50	1.25
27. 24-in. drains, cemented joints	220 l. f.	1.50	2.00	1.50
28. Grouted-paving gutters	280 s. y.	3.00	5.00	6.00
29. Concrete; in dam	1,850,000 c. y.	2.48	2.86	2.60
30. Concrete; parapets	780 c. y.	44.00	40.00	24.00
31. Conc.; spillway crest, piers	9,300 c. y.	8.00	11.00	7.50
32. Conc.; floor spillway apron	22,000 c. y.	2.30	4.00	5.30
33. Conc.; grav. training walls	11,000 c. y.	3.75	6.50	7.00
34. Conc.; cantilever train. walls	2,400 c. y.	10.00	13.00	8.00
35. Conc.; trashrack structures	1,950 c. y.	40.00	37.00	20.00
36. Concrete; blockouts	500 c. y.	30.00	70.00	40.00
37. Conc.; needle valve structure	2,280 c. y.	9.00	17.00	10.00
38. Conc.; floors of stilling basin	3,100 c. y.	2.80	6.00	8.00
39. Conc.; walls, outlet wks., still. basin	2,100 c. y.	17.00	25.00	22.00
40. Conc.; cutoff wall footing	150 c. y.	2.20	6.00	10.00
41. Conc.; cutoff wall	230 c. y.	16.00	16.00	15.00
42. Concrete; backfill	1,050 c. y.	6.50	12.50	12.00
43. Place reinforcing bars	3,300,000 lb.	.016	.02	.02
44. Welding reinf. bars	200 ea.	1.00	1.00	1.00
45. Cooling concrete, dam	1,850 c. y.	.06	.11	.12
46. Finish lighting recesses	320 ea.	5.00	3.25	6.00
47. Chip and roughen conc. surf	500 s. y.	2.50	3.00	2.50
48. Place metal sealing strips	56,500 l. f.	.60	.70	.60
49. Place rubber water stops	2,100 l. f.	1.00	1.00	.60
50. Place elastic joint filler	1,800 s. f.	.30	.20	.60
51. Inst. tubing and ftgs., joints	195,000 lb.	.16	.15	.17
52. Inst. metal tubing and ftgs	2,450,000 lb.	.12	.09	.11
53. Inst. conduit-lining cstgs	584,000 lb.	.01	.03	.02
54. Install outlet pipes	608,000 lb.	.0125	.025	.02
55. Inst. gate frames and tracks	290,000 lb.	.035	.04	.04
56. Inst. bulkhd. and coaster gates	107,000 lb.	.01	.025	.02
57. Inst. trashrack metalwork	646,700 lb.	.0125	.01	.015
58. Install tube valves	1,551,000 lb.	.0125	.02	.02
59. Install drum gates	1,834,000 lb.	025	.03	.02
60. Inst. drum gate contr. mech	102,000 lb.	.06	.05	.05
61. Inst. met. tubing; brass, steel, wrt. iron and c. i. pipe, ftgs., valves under 6-in. dia	155,000 lb.	.06	.10	.08
62. Same as above, over 6-in. dia	640,500 lb.	.025	.05	.05
63. Install gantry cranes	313,000 lb.	.0125	.025	.01
64. Install track rails	128,700 lb.	0125	.03	.02
65. Install metal stairways	173,200 lb.	025	.04	.03
66. Install pipe handrails	14,600 lb.	10	.07	.08
67. Inst. manholes, pls., gradings, etc	24,000 lb.	0125	.05	.04
68. Install hatchway covers	37,900 lb.	01	.04	.04
69. Install misc. metalwork	30,000 lb.	.12	.15	.08
70. Inst. elec. metal conduit, 1¼-in. or less	9,400 l. f.	18	.40	.20
71. Inst. elec. metal cond. 1¼-3-in.	7,700 l. f.	.35	.50	.25
72. Install ground wires	170 lb.	1.00	.30	1.00
73. Install electrical conductors	12,500 lb.	.15	.25	.20
74. Install electrical equipment	6,500 lb.	.12	.10	.20
75. Install electrical cable	20,000 l. f.	.10	.15	.10

FERN RIDGE DAM OREGON

OWNER: U. S. Engineer Office, Pittock Block, Portland, Ore.; Major C. R. Moore, engineer.

PROJECT: Constructing earth fill dam (Fern Ridge Dam) located on Long Tom River, Lane County, Oregon, about thirteen miles northwest of city of Eugene. Involves excavation for spillway and outlet structure foundation, diversion and care of river; construction of concrete overflow spillway and outlet works; construction of main earth fill dam; two earth fill dikes; spillway and outlet gates; and access roads.

CONDITIONS: Contractor to complete work in 575 working days and furnish all materials except gantry crane which is to be furnished under another contract. Rail and highway transportation facilities available. Wages specified are: skilled labor, $1.25 per hr.; semi-skilled, $1.00 per hr.; and common labor, 75c. per hr.

BIDS: Twenty bids were received March 5, 1940, ranging from the contract low of $722,592 to $1,323,471.

LOW BIDDERS:

1. Morrison-Knudsen Co., Boise, Idaho (contract) $723,592
2. Fredericksen & Westbrook, Sacramento, Calif. 743,547
3. Hanrahan Connolly Co., San Francisco, Calif. 747,470

		Unit Prices		
Item	Quan.	(1)	(2)	(3)
1. Diversion, care of water	L. S.	$7,500.00	$10,000.00	$1,600.00
2. Washed gravel for drains	3,000 c. y.	2.40	1.25	1.70
3. Coarse gravel for drains	13,000 c. y.	.50	.35	.50
4. Common excavation	50,000 c. y.	.26	.16	.25
5. Rock excavation	18,000 c. y.	2.00	1.50	40
6. Drill, broach rock faces	2,500 s. f.	.70	1.20	1.50
7. Foundation drain pipe	7,000 l. f.	1.60	1.50	1.50
8. Strip dam fndn. area	200,000 c. y.	.115	.12	16
9. Borrow excavation	1,340,000 c. y.	.137	.13	16
10. Embankmt. fill, sone 1	110,000 c. y.	.02	.02	02
11. Embankmt. fill, sones 2 and 3	900,000 c. y.	.03	.044	05
12. Compact fill, stream beds	50,000 c. y.	.025	.06	03
13. Add'l. rolling, 2 trips	200,000 s. f.	.008	.01	005
14. Backfill against struct	3,400 c. y.	.50	1.00	1.00
15. Dump riprap, embankment	51,000 c. y.	1.10	1.75	1.10
16. Same, spillway, side slopes	8,000 c y	1.15	2.00	1.40
17. Grouted rock paving	425 c. y.	5.30	8.00	7.00
18. Rock spalls	6,400 c. y.	1.10	2.00	70
19. Topsoil facing, embank	4,200 sq.	1.55	1.80	1.00
20. Concrete, Class A	6,250 c. y.	17.00	14.00	16.00
21. Concrete, Class B	4,100 c. y.	10.00	10.00	8.00
22. Special concrete	75 c. y.	30.00	25.00	40.00
23. Drill fndn. grout holes	660 l. f.	.50	1.50	1.00
24. Pressure grouting	200 c. y.	2.50	3.00	2.00
25. Copper seal strips	2,700 lb.	.40	.50	50
26. Grouting compound	9,000 lb.	.12	.11	15
27. Reinforcing steel	860,000 lb.	.045	.042	045
28. 3x3-ft. sluice gate	L. S.	660.00	600.00	800.00
29. Concrete counterweights	L. S.	1,350.00	3,000.00	1,200.00
30. Structural carbon steel	83,000 lb.	.12	.10	14
31. Crane rails	19,500 lb.	.07	.04	07
32. Corrosion resist. cast steel	18,000 lb.	.60	.50	60
33. Corr. resist. rolled steel	4,000 lb.	.60	.75	60
34. Miscellaneous metal	37,000 lb.	.16	.15	25
35. Pipe, fittings, valves	26,000 lb.	.15	.15	25
36. 500-gpm. pump and meter	L. S.	500.00	500.00	800.00
37. Fuel storage tank and pump	L. S.	135.00	500.00	200.00
38. Brons expan. plates	3,000 lb.	.50	.50	.52
39. Radial spillway gates	6 ea.	7,800.00	6,700.00	8,000.00
40. Outlet gates, stop logs, etc	L. S.	22,000.00	17,000.00	23,500.00
41. Electrical system	L. S.	5,800.00	6,000.00	4,880.00
42. Roadway excavation, common	7,000 c. y.	.20	.25	20
43. Roadway excavation, rock	100 c. y.	1.00	1.80	40
44. 12-in. corr. iron culvert	120 l. f.	1.80	2.80	2.50
45. 18-in. corr. iron culvert	200 l. f.	3.40	3.50	3.50
46. 24-in. corr. iron culvert	90 l. f.	5.35	4.25	6.00
47. Roadway surf., base crse	3,300 c. y.	1.00	3.00	1.60
48. Roadway surf., top crse	2,200 c. y.	1.00	3.00	2.00
49. Roadway guard posts	360 ea.	1.80	2.00	3.00
50. Barb. wire fencing, access rds	5,800 l. f.	.07	.08	20
51. Woven wire fencing, access rds	5,800 l. f.	.12	.10	30
52. Metal gates, access rds	10 ea.	11.50	20.00	25.00
53. Control house, plumbing, san. sys.	L. S.	1,000.00	425.00	500.00

INDIAN ROCK DAM PENNSYLVANIA

OWNER: U. S. Engineer Office, Baltimore, Md. Col. W. A. Johnson, district engineer.

PROJECT: Construction of Indian Rock Dam on main branch of Codorus Creek, near junction of Main and South Branches, about 3 miles southwest of York, Pa. Rolled earth and rock fill outer shell. At top elevation dam will be 1,000-ft. long. Height above valley terrace 75 ft.; height above stream bed 80 ft. Top width 29 ft.; road across top. Embankment consists of select impervious core with adjacent transition sections and upstream and downstream rock shells. Core trench to be excavated to firm rock. Outlet works to be located in right abutment consist of circular tunnel, concrete intake structure, trash racks and gates at upper end and stilling basin at lower end. Spillway channel 750-ft. long varies in width from 30 to 50 ft.

CONDITIONS: Contractor to furnish all materials and complete project in 763 calendar days. Railroad facilities available to within 1½ miles of dam site. Two secondary highways also available for transportation. Wage rates on project are: skilled, 80c. to $1.25 per hr.; semi-skilled, 60 to 75c.; and common, 50 to 60c. per hr.

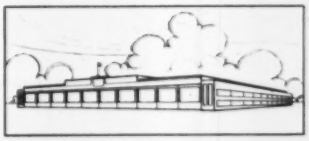
BIDS: Fifteen bids were received December 22, 1939, ranging from the contract low of $1,206,104 to $1,964,415.

LOW BIDDERS:

1. Benjamin Foster Co., Philadelphia, Pa. ... $1,206,104
2. Booth & Flinn Co., Pittsburgh, Pa. 1,208,881
3. Ralph Myers & Chas. H. Tompkins Co., Washington, D. C. 1,223,414

		Unit Prices		
Item	Quan.	(1)	(2)	(3)
1. Diversion and care of stream	L.S.	$2,300.00	$6,000.00	$18,000.00
2. Remove existing structures	L.S.	600.00	500.00	900.00

BYRNE doors for FIRST LINE DEFENSE



A contract for $275,381.00 . . . the largest single order for hangar doors on record . . . has been awarded to Byrne for the Navy's Neutrality Patrol Hangars on the Atlantic Coast.

The U. S. Navy wanted the best available equipment as well as a source of supply capable of prompt delivery. BYRNE doors proved their superiority in all tests, including speed and ease of operation (by power or hand) and the ability to function under all climatic conditions.

BYRNE doors are also available for crane openings and industrial purposes.

Standardized Hangars by BYRNE, with motor or manually operated doors, have established an entirely new conception of low-cost hangars.

BYRNE doors incorporated

1150 Griswold Street, Detroit, Mich.

Branch Offices:

Washington, D. C. **San Francisco, Calif.**

3. Clean reservoir area, bel. El. 435.	L.S.	2,000.00	3,000.00	5,860.00
4. Clean and grub dam site	10 ac	470.00	500.00	150.00
5. Common stripping, embankm't.	12,500 c. y.	.33	.75	.34
6. Rock stripping, embankment	500 c. y.	4.70	4.00	4.00
7. Common excavation	150,000 c. y.	.40	.50	.28
8. Excav., borrow areas A, B, inc. haul	200,000 c. y.	.20	.30	.28
9. Rock excavation, spillway	158,000 c. y.	1.44	.95	1.35
10. Rock excav., tunnel intake, outlet, etc	20,000 c. y.	2.35	1.50	1.20
11. Rock excav., core trench	1,800 c. y.	3.00	2.00	2.00
12. Rock excavation, trenches	330 c. y.	5.30	12.00	10.00
13. Line drill and broach	37,000 s. f.	1.04	1.85	1.50
14. Struct. backfill compacted	1,500 c. y.	1.00	3.50	.50
15. Struct. backfill, uncompacted	1,900 c. y.	.65	1.50	.20
16. Tunnel excavation	4,500 c. y.	16.70	8.00	9.50
17. Timbering in tunnel	45 Mbm	130.00	50.00	55.00
18. Select imperv. fill, embank	210,000 c. y.	.15	.10	.06
19. Impervious fill, embankment	80,000 c. y.	.15	.10	.06
20. Roll, add'l. three trips	50,000 sq.	.03	.02	.01
21. Rockfill, embank., toe trench, slopes	190,000 c. y.	.17	.23	.10
22. Rock spalls, embank., stream slopes	27,000 c. y.	.26	.28	.70
23. Sand, gravel filters and drains	1,700 c. y.	.90	.70	1.50
24. Rock paving in gutters	400 s. y.	1.00	5.00	1.50
25. Cr. stone surf., access roads	9,000 s. y.	.80	1.00	.65
26. Spalls, rockbase in rdwy	2,000 c. y.	2.50	.60	.70
27. Drill holes, rock or conc	17,000 l. f.	.66	.50	.60
28. Core drill for press. grout	6,000 l. f.	2.60	2.25	2.00
29. Rotary or percus. drill, grout	2,400 l. f.	2.00	1.00	1.40
30. Pressure grouting	8,000 c. f.	1.30	1.70	1.00
31. Pneum. cement wk. or gunite	5,000 c. f.	1.00	.80	1.15
32. Reinforcing steel	736,000 lb.	.05	.045	.047
33. 4-in. tile drain	9,000 l. f.	1.00	1.00	1.00
34. 10-in. tile drain	950 l. f.	1.50	1.30	1.25
35. 12-in. tile drain	680 l. f.	1.65	1.50	1.35
36. Conc., intake weir, ret. walls	12,650 c. y.	9.65	11.00	11.40
37. Conc., spillway chan. lining, etc., side slopes	5,500 c. y.	10.00	15.00	16.60
38. Conc., spillway chan. lining, etc., floor	5,100 c. y.	8.00	10.00	10.50
39. Conc., intake struct., operat. hse	6,000 c. y.	14.50	12.50	13.20
40. Concrete in tunnel lining	1,300 c. y.	24.25	15.00	18.90
41. Conc., core tr., slab of weir, etc.	650 c. y.	9.30	9.00	9.00
42. Service gate, hoisting equip., cond. lining	L.S.	50,000.00	75,000.00	70,000.00
43. Emergency gates, accessories	L.S.	10,000.00	20,000.00	19,500.00
44. Power and lighting system	L.S.	5,000.00	6,000.00	12,500.00
45. Copper water stops	300 lb.	.65	.60	.63
46. Traveling crane and hoist	L.S.	4,042.00	6,000.00	5,700.00
47. Struct. steel, bridge and misc.	167,000 lb.	.08	.08	.072
48. Misc. metalwork	14,000 lb.	.20	.20	.24
49. Black steel pipe	3,300 lb.	.10	.10	.19
50. Wrought iron pipe	6,300 lb.	.13	.15	.126
51. 12-in. corr. met. pipe	32 l. f.	2.65	2.00	2.17
52. 18-in. corr. met. pipe	32 l. f.	4.00	3.00	3.06
53. 24-in. corr. met. pipe	70 l. f.	5.30	4.00	3.60
54. Highway guard rail	4,200 l. f.	1.20	.90	1.10
55. Steel pipe fencing	250 l. f.	2.00	1.00	1.68
56. Fencing, spillway and property	6,000 l. f.	1.40	.60	.92
57. Operating house, superstr	L.S.	15,230.00	18,000.00	18,350.00
58. Lumber for bridge	12 Mbm	170.00	120.00	126.00
59. Stiff-leg derrick	L.S.	5,600.00	7,000.00	7,800.00
60. Power transmission line	L.S.	2,380.00	800.00	720.00
61. Garage and comfort station	L.S.	4,556.00	5,000.00	5,280.00
62. Engineer field office	L.S.	2,180.00	3,000.00	4,160.00
63. Operator's house, complete	L.S.	10,263.00	14,000.00	18,480.00
64. 6-in. vit. pipe sew. and manholes.	260 l. f.	5.30	4.00	2.85
65. Septic tank and filter	L.S.	1,226.00	1,600.00	1,980.00
66. Pump and accessories	L.S.	500.00	500.00	413.00
67. Drill well, max. depth 100 ft	100 l. f.	3.60	3.00	3.78
68. Drill well, over 100 ft. deep	120 l. f.	4.00	3.25	3.78
69. Case well, max. depth 55 ft	55 l.f.	2.60	2.00	1.26
70. Surface dressing and seeding	1,100 sq.	1.60	5.00	.75
71. Enameled steel gages	120 l. f.	6.00	1.30	1.89

LACKAWACK DAM, NEW YORK

OWNER: City of New York, N. Y., Board of Water Supply, Walter E. Spear, Chief Engineer.

PROJECT: Construction of Lackawack Dam (Contract 340), effluent chamber of Rondout Reservoir together with inlet channel and superstructure, blow-off tunnel, waste weir and waste channel of reservoir, north portion of Rondout-West Branch tunnel including Shaft 1, one-half mile of bituminous macadam highway across dam, waste channel bridge, and appurtenances of all these structures. Closure of existing diversion tunnel and final grading also included. Dam is located in Wawarsing, Ulster County, N. Y. Reinforced concrete effluent chamber and waste weir on westerly side of reservoir near dam. Tunnel begins at effluent chamber, runs southeasterly to Shaft 1, and thence to southern limit of contract. Dam to be of rolled earth fill. Slopes to be partially covered by rip-rap; downstream slope also to be covered with topsoil.

CONDITIONS: Ellenville station of N. Y., O. & W. R.R. about 8½ miles from site of work; Napanoch station about 6½ miles. Contractor to furnish all materials, except testing equipment and metal work furnished by owner. Suitable earth embankment materials nearby. Rock investigations in vicinity indicate stone to be satisfactory for facing structures, rubble masonry and paving. Time for completion, 72 consecutive calendar months. Skilled wages for general construction on project range from $2.25 per hr. for hoisting engineers to $1.00 for painters; semi-skilled from $1.65 for roller operators to 62½c. for mason's helpers; unskilled, 75c. per hr. Unskilled labor rate in shafts and tunnels, 87½c. per hr.

BIDS: Five bids were opened July 25, 1939, ranging from the contract low of $15,486,150 to $22,134,000. Contract awarded August 16, 1939.

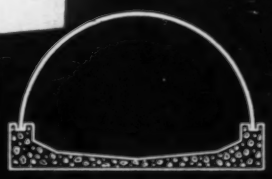
LOW BIDDERS:

1. Mason & Hanger Co., Inc., New York, N. Y. (contract) $15,486,150
2. Jahn-Bressi-Bevanda Constructors, Inc., Los Angeles, Calif. 16,195,700
3. Keystone Company, San Francisco, Calif. . 16,720,150

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Stream control	L. S.	$20,000.00	$25,000.00	$45,000.00
2. Remove buildings	40,000 s. f.	.20	.15	.20
3. Remove soil	160,000 c. y.	.50	.42	1.00
4. Earth excav., open cut	1,220,000 c. y.	.35	.57	.50
5. Earth excav., sheet. cut-off trench	12,000 c. y.	2.50	8.50	2.30
6. Earth excav., caissons (bottom cut-off tr. to El. 580)	24,000 c. y.	20.00	34.00	23.00
7. Earth excav., caissons (below El. 580)	16,500 c. y.	30.00	34.00	35.00
8. Rock excav., open cut	410,000 c. y.	2.20	1.75	1.80
9. Rock excav., caissons	3,500 c. y.	40.00	50.00	35.00
10. Prepare rock surface	5,500 s. y.	8.00	5.00	5.60
11. Rolled embankment	5,600,000 c. y.	.48	.45	.53
12. Refill and embank	1,250,000 c. y.	.10	.25	.18
13. Rock embankment	1,000,000 c. y.	.45	1.25	.35
14. Surf. dress. and grass	170,000 c. y.	.60	1.50	1.45
15. Conc. masonry, open cut	145,000 c. y.	14.00	11.00	11.50
16. Conc. mason., under air	10,000 c. y.	16.00	25.00	30.00
17. Dry rubble mason., paving	60,000 c. y.	3.50	10.00	10.00
18. Rubble pav. in mortar	11,000 c. y.	5.40	13.00	14.00
19. Rubble mason. and facing in mortar	27,000 c. y.	13.00	16.00	16.50
20. Sandstone, bluestone fac., trim and coping	3,500 c. y.	100.00	70.00	114.00
21. Brick masonry	550 c. y.	36.00	40.00	35.00
22. Conc. roof tiles	1,450 s. y.	14.00	12.00	14.00
23. Granolithic finish	850 s. y.	1.00	1.00	1.20
24. Painting	250,000 s. f.	.03	.05	.045
25. Structural steel	1,850,000 lb.	.07	.08	.07
26. Steel interlining, subst. effluent chamb	1,130,000 lb.	.09	.06	.10
27. Steel sheet piling	2,200,000 lb.	.045	.06	.06
28. Steel, reinf. conc	6,000,000 lb.	.055	.055	.065
29. Aluminum articles	48,000 lb.	1.00	1.20	1.50
30. Timber, lumber, open cut	300 M bm.	135.00	100.00	130.00
31. Bitum. mac. pavemt	3,300 c. y.	6.00	6.00	5.00
32. Bitum. mat'l	55,000 gal.	.09	.10	.08
33. Conc. pavement	1,000 c. y.	6.50	14.00	8.00
34. Sink shaft in rock	13,000 c. y.	25.00	18.00	23.00
35. Excav. tunnels	100,000 c. y.	14.50	11.00	13.00
36. Enlarg. shafts, tunnels	1,500 c. y.	10.00	11.00	17.50
37. Prot. coat. of cem. mortar	2,000 c. y.	25.00	25.00	21.00
38. Str. steel, support, shaft and tunnels	1,500,000 lb.	.07	.07	.90
39. Timbering, sh. and tun	275 M bm.	120.00	100.00	235.00
40. Dry packing	1,200 c. y.	5.00	5.00	6.00
41. Drain. channel, sh. and tun	11,200 l. f.	20.00	7.00	9.00
42. Forms, mason. lin. of shaft	1,000 l. f.	20.00	28.00	47.00
43. Forms, mason. lin., stilling chamb. and incl. spillway and diver. tun	400 l. f. of tun.	100.00	70.00	105.00
44. Forms, mas. lin. of 15 ft. and conn. tun	2,500 l. f. of tun.	25.00	14.00	21.00
45. Forms, mason. lin. of 13.5 ft. tun	6,050 l. f. of tun.	15.00	10.00	9.50
46. Forms, mas. lin. blow-off tun	1,450 l. f.	10.00	10.00	6.00
47. Conc. masonry, shaft	4,600 c. y.	15.00	7.00	16.50
48. Conc. masonry, tunnels	48,000 c. y.	8.00	7.00	9.58
49. Excess conc. masonry	7,000 c. y.	5.00	5.00	5.00
50. Test borings	30,000 l. f.	5.00	5.00	5.00
51. Pumping	350,000 Mil. f. g.	.25	.25	.25
52. Drill holes, rock, mason	50,000 l. f.	1.00	1.00	1.00
53. Steel pipes, grouting	30,000 l. f.	.80	1.00	.60
54. Conn. for grouting	4,000 ea.	3.00	4.00	4.00
55. Mix and pl. grout	25,000 c. y.	14.00	8.00	15.00
56. Portland cement	570,000 bbl.	2.20	2.15	2.30
57. Bitum. cur. solut., conc. masonry	100,000 s. y.	.08	.10	.14
58. Cr. stone and grav	5,200 c. y.	3.00	3.00	4.00
59. Sand for filters, grout and prot. coat cem. mort	6,000 c. y.	4.00	3.00	4.00
60. Granite curb	1,300 l. f.	4.00	5.00	5.00
61. Steel pipe, fittings	285,000 lb.	.10	.10	.14
62. Grating, ladders, stairs	135,000 lb.	.20	.20	.17
63. Cast iron pipe and fittings	83,000 lb.	.10	.15	.11
64. Misc. c. i., wrt. iron, steel	2,200,000 lb.	.12	.10	.13
65. Galvanizing	650,000 lb.	.03	.03	.05
66. Misc. bronze, brass, copper, lead	75,000 lb.	.80	.60	.70
67. Inst. and test equip. and metal-work furn. by owner	2,000,000 lb.	.04	.05	.04
68. Vit. pipe and conduit	10,000 l. f.	1.50	1.00	1.20
69. Chlorinators	2 ea.	5,000.00	5,000.00	4,000.00
70. Liquid chlorine	50,000 lb.	.10	.10	.08
71. Sanitary services	L. S.	75,000.00	35,000.00	150,000.00
72. Cleaning up	L. S.	10,000.00	35,000.00	25,000.00

ARMCO Multi Plate stream enclosure being installed in large midwestern city. Average progress of seven men was better than 40 lineal feet per day.

Maybe you can build those waterways, after all



Budgets won't stretch; yet you may be pleasantly surprised to see how far you can make those waterway dollars go with ARMCO Multi Plate. At the same time you can stick to your determination of using the very best materials in the interest of public safety and economy.

Many other cities have found ARMCO Multi Plate an especially wise choice when they were faced with the problem of building large waterways at reasonable cost.

Designing with ARMCO Multi Plate not only speeds the work but definitely eliminates the hazard of structural failure. The heavy corrugated iron plates are amazingly strong. In actual tests a 20-foot span Multi Plate Arch 10 feet long withstood loads up to 350 tons. Also important is the assurance of long material life that Multi Plate brings to your structures. The enduring qualities of the ARMCO Ingot Iron base metal have been demonstrated in 34 years of corrosive service.

Consider this great strength and durability along with quick, easy erection by unskilled labor, and you'll see why Multi Plate meets every municipal need. It is the ideal way to build stream enclosures, bridges, large sewers or special drainage structures. Weigh the advantages of ARMCO Multi Plate for that next project and meanwhile write us for data. ARMCO DRAINAGE PRODUCTS ASSN., Middletown, O.

ARMCO

ARMCO MULTI PLATE

A TYPE OF PRODUCT ORIGINATED AND DEVELOPED BY ARMCO ENGINEERS

WATERFRONT HIGHWAY PITTSBURGH, PA.

OWNER: Allegheny County Department of Public Works, Pittsburgh, Pa.; John F. Laboon, director.

PROJECT: Constructing portion (Contract 5) of new express two-level highway along Water Street, on Monongahela side of Pittsburgh's "Golden Triangle". Includes 8-ft. sidewalk and two 30-ft. roadways separated by ramps to 40-ft. wide lower level. Inner roadway occupies present location of Water St., and outer is elevated over wharf space and part of lower level. Reinforced cantilever type retaining wall between inner road and underpass aids in protection against flood.

CONDITIONS: Work to be completed by June 30, 1940. Contractor to furnish all materials. Rail, highway and water transportation available. Wage rates on project are: skilled, $1.75 per hr.; semi-skilled, $1.00 per hr.; and common, 80c per hr.

BIDS: Five bids were opened July 27, 1939, ranging from the contract low of $533,775 to $552,555.

LOW BIDDERS:

1. John F. Casey Co., Aspinwall, Pa. (contract) $533,775
2. Navarro Corporation, Pittsburgh, Pa..... 537,617
3. George Vang, Inc., Pittsburgh, Pa..... 539,922

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Class 1 excav.	6,000 c. y.	$2.00	$1.50	$2.00
2. Class 2 excav.	19,000 c. y.	5.75	5.00	6.50
3. Std. Cl. A conc. incl. excav., refilling and anchor bolts	13 c. y.	35.00	35.00	35.00
4. Extra depth conc., light pole fndn.	1 c. y.	10.00	75.00	50.00
5. Cl. A conc., traffic isl., incl. dowels.	28 c. y.	20.00	35.00	20.00
6. Embank and refill, gran. slag	1,000 c. y.	1.50	1.50	1.80
7. Granul. slag backfill	400 c. y.	1.85	1.50	1.80
8. Cl. A conc. for abutments, ret. wall, backwall, br. seat	2,500 c. y.	27.00	20.00	21.00
9. Cl. A conc., subdeck slabs, curbs, fascias, coping	570 c. y.	30.00	40.00	26.00
10. Pavmt. conc., top rdway	547 c. y.	20.00	25.00	15.00
11. Cl. A conc., traffic isl., walks (reinf.)	68 c. y.	22.50	35.00	20.00
12. Cl. B concrete	2,600 c. y.	20.00	20.00	17.00
13. Conc. sidewalk on grade	9,000 s. f.	.35	.40	.40
14. Concrete sidewalk	550 s. f.	.55	.75	1.00
15. Rein. conc. pavement (1 crse.)	8,500 s. y.	3.60	3.80	2.50
16. Conc. pavmt., mesh reinf.	100 s. y.	3.00	3.25	3.00
17. Conc. std. curb	800 l. f.	1.65	2.00	1.75
18. Conc. std. curb, with underdrain	750 l. f.	3.50	2.50	3.00
19. Conc. spec. curb, 12-in.	700 l. f.	2.25	2.15	2.00
20. Conc. spec. curb, 16-in.	880 l. f.	2.50	2.40	2.00
21. Conc. spec. curb, railing fndn., under-drain of perf. clay pipe	120 l. f.	6.00	3.00	3.00
22. Conc. spec. curb, railing fndn.	130 l. f.	7.25	3.50	4.00
23. Cl. A conc. guard on curb	120 l. f.	1.50	2.50	3.00
24. Cl. A conc., endwalls	3 c. y.	20.00	40.00	21.00
25. Cl. A conc., spec. endwalls	25 c. y.	35.00	40.00	21.00
26. Spec. conc. gutters	350 l. f.	1.25	1.00	1.50
27. Conc. cradle, pipe culv.	30 c. y.	15.00	25.00	21.00
28. Cement	8,000 sacks	.25	.20	1.15
29. Gravel, base course	800 s. y.	.75	.80	1.00
30. Membrane waterprfg.	1,750 s. y.	1.25	1.50	2.50
31. Tar waterproofing	2,700 s. y.	.50	.50	.60
32. 10-in. C.I. pipe, culv.	48 l. f.	4.00	5.00	8.00
33. 16-in. C.I. pipe, culv.	84 l. f.	5.25	8.00	11.00
34. 6-in. clay pipe, culv.	40 l. f.	1.40	2.50	4.00
35. 8-in. clay pipe, culv.	60 l. f.	1.60	2.75	5.00
36. 15-in. clay pipe, culv.	620 l. f.	3.00	3.60	6.00
37. 15-in. clay pipe, sewer	520 l. f.	13.00	4.50	6.00
38. 9-in. clay pipe, house lateral	150 l. f.	3.00	2.50	7.00
39. 36-in. brick sewer, complete	300 l. f.	53.00	75.00	65.00
40. Brick catch basins, type 1 & 2	7 ea.	320.00	140.00	130.00
41. Reconstr. type 1 catch basin	1 ea.	200.00	100.00	130.00
42. Brick catch basin, type 6	3 ea.	230.00	200.00	130.00
43. Brick storm inlets, type 1	2 ea.	230.00	150.00	115.00
44. Brick storm inlet, type 5	1 ea.	200.00	130.00	115.00
45. Brick storm inlet, type 6	4 ea.	200.00	150.00	115.00
46. Brick manholes	6 ea.	400.00	175.00	180.00
47. Spec. brick m h, 36-in sewer	1 ea.	200.00	250.00	300.00
48. Extra depth catch basin, type 1 or 2	15 l. f.	10.00	15.00	22.00
49. Extra depth brick manholes	15 ea.	10.00	15.00	22.00
50. Malleable iron gratings	1 ea.	30.00	100.00	35.00
51. Stone backing	450 c. y.	6.00	8.00	7.00
52. Std. conc. vaults, incl. drains	22 ea.	85.00	100.00	115.00
53. Spec. conc. vaults, incl. drains	5 ea.	140.00	600.00	650.00
54. 6-in. underdr., perf. clay pipe	120 l. f.	1.00	1.25	1.50
55. Med. carbon copper bng. steel	1,120,000 lb.	.054	.07	.06
56. Chrome nickel iron	3,300 lb.	.75	1.50	.75
57. Malleable iron castings	3,000 lb.	.40	.25	.40
58. Steel castings	28,000 lb.	.15	.20	.16
59. Copper watersealz	3,200 lb.	.50	60	.75
60. Reinforcing bars	700,000 lb.	.05	.05	.05
61. 6-in. wr. iron pipe	100 l. f.	3.25	4.00	3.50
62. Concrete piles	17,000 l. f.	2.60	2.60	2.80
63. Steel sheet piling	9,500 s. f.	.30	.70	.75
64. Steel sheet piling, left in place	4,000 s. f.	.70	.60	.65
65. ¾-in. asphalt plank	1,700 s. y.	1.50	2.00	3.00
66. Rein. conc. sidewalk over vault	160 s. f.	1.50	1.25	1.00
67. 30-in. c. i. pipe, cement lined	236 l. f.	32.00	25.00	23.00
68. 6-in. centr. c. i. pipe, cem. lined	24 l. f.	7.00	5.00	7.00
69. 30-in. hub gate valve	1 ea.	1,000.00	1,500.00	500.00
70. 6-in. hub gate valve	1 ea.	50.00	60.00	50.00
71. 6-in. single nozzle hydrant	1 ea.	100.00	100.00	110.00
72. C. I. deep frames and covers	18 ea.	30.00	25.00	40.00
73. Brick masonry, waterlines	35 c. y.	45.00	40.00	40.00
76. Conc. masonry, waterlines	15 c. y.	15.00	25.00	30.00
77. Misc. steel and iron	2,000 lb.	.20	.10	.10
78. Additional excav.	30 c. y.	3.00	3.00	6.00

HIGHWAYS, KANSAS

OWNER: Kansas State Highway Department, Topeka, Kansas. Shockley Engineering Co., Kansas City, Mo., engineers.

PROJECT: Grading and concrete paving 3.219 mi. of State Line Road from 77th to 103rd Sts., Johnson County, Kansas. Involves construction of 20-ft. concrete strip with 8-ft. shoulders, and a 40-ft. spandrel filled concrete arch bridge.

CONDITIONS: Contractor to furnish all materials and complete project in 60 days. Highway transportation available. Wages are: skilled, $1.50 per hr.; semi-skilled, 80c. to $1.10 per hr.; and common labor, 57½c. per hr.

BIDS: Three bids were received on December 5, 1939, for grading and culvert work ranging from the contract low of $45,003 to $97,535; five bids received on same day for paving, ranging from $78,367 to $99,790; and five bids opened for the bridge construction ranging from $18,387 to $23,777.

GRADING AND CULVERTS

LOW BIDDERS:

1. Sherrer & Bennett, Kansas City, Kan. (contract) $45,003
2. Perry McGlone, Kansas City, Mo..... 70,494
3. C. E. Grey, Emporia, Kan..... 97,535

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Trees felled and grubbed	180 ea.	$4.00	$10.00	$10.00
2. Hedge grubbing	7,438 l. f.	.12	.30	.20
3. Common excavation	65,200 c. y.	.245	.40	.42
4. Rock excavation	20,500 c. y.	.65	.80	1.50
5. Earth compaction	47,920 c. y.	.04	.05	.05
6. Uncl. culvert excav.	814 c. y.	1.80	2.00	3.00
7. Water pumped	3,710 M gal.	.50	.50	.10
8. Water hauled	3,710 M gal.	.10	3.00	.50
9. Water system	L. S.	1,000.00	.....	2,500.00
10 Class "A" concrete	327 c. y.	20.00	28.00	60.00
11. Reinforcement steel	30,490 lb.	.045	.05	.06
12. 15 in. entrance pipe	807 l. f.	1.35	1.50	4.00
13. 24 in. cross road pipe	84 l. f.	2.60	2.70	4.00
14. 24 in. side road pipe	164 l. f.	2.60	3.00	7.00
15. 36 in. cross road pipe	44 l. f.	4.80	5.50	.....
16. Stone wash cks.	834 l. f.	.50	.80	2.00
17. Roll and tamp	14,366 c. y.	.03	.04	.04

PAVING

LOW BIDDERS:

1. Koss Constr. Co., Des Moines, Ia. (contract) $78,367
2. Harrison Engr. & Constr. Corp., Kansas City, Mo. 78,377
3. J. A. Tobin Constr. Co., Kansas City, Kan.... 81,773

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Common excavation	4,600 c. y.	$0.35	$0.20	$0.24
2. Treated subgrade	20,000 s. y.	.....	.....	.....
3. Concrete paving	39,218 7 s. y.	1.83	1.88	1.89
4. Pipe underdrain	3,313 l. f.	.50	.45	1.21
5. Crushed stone surface	860 s. y.	1.20	1.00	1.00
6. Bituminous surface	940 s. y.	2.20	1.25	1.55
7. Steel plate guard fence	200 l. f.	1.15	1.00	1.10

BRIDGE

LOW BIDDERS:

1. J. A. Tobin Constr. Co., Kansas City, Kan..$18,387
2. Reese Constr. Co., Scandia, Kan..... 18,493
3. Schlichter Bridge Co., Clay Center, Kan.... 20,038

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Class I excavation	456 c. y.	$1.25	$2.00	$1.50
2. Class II excavation	376 c. y.	3.00	5.00	3.60
3. Class "A" concrete	503 c. y.	23.15	21.75	25.00
4. Class "D" concrete	2 2 c. y.	50.00	35.00	50.00
5. Reinforcement steel	75,550 lb.	.05	.045	.05
6. Remove old structure	L. S.	250.00	300.00	500.00
7. Waterproofing	10,380 s. f.	.05	.06	.10

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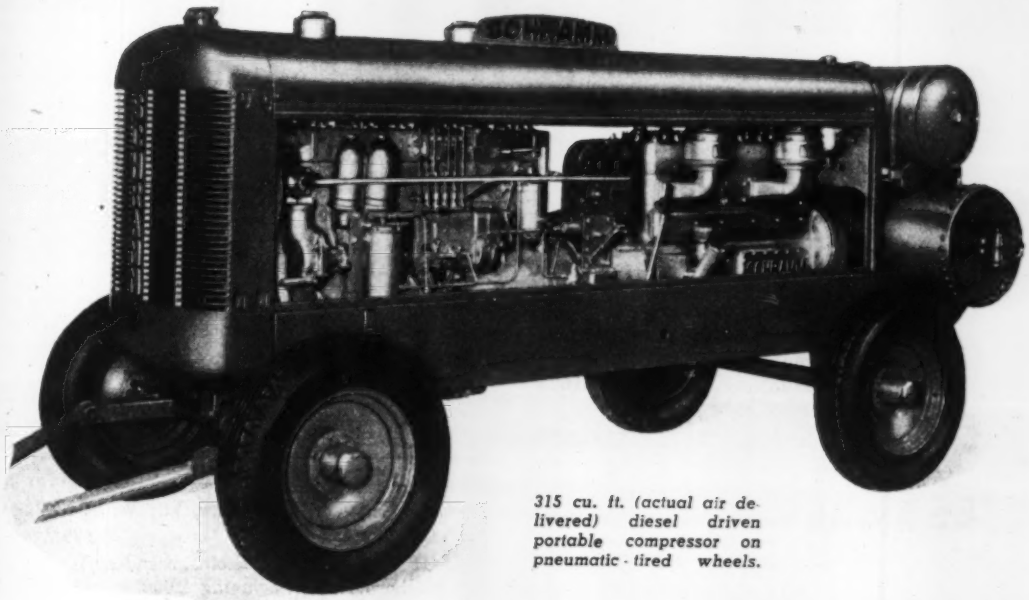

315 cu. ft. (actual air delivered) diesel driven portable compressor on pneumatic-tired wheels.

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HIGHWAYS, SPENCER COUNTY, INDIANA

OWNER: Indiana State Highway Commission, Indianapolis, T. A. Dicus, chairman; M. R. Keefe, chief engineer.

PROJECT: Construction of 4.519 miles of reinforced concrete pavement in Spencer County on State Rd. 161, Indiana. (Contract No. 1871.)

CONDITIONS: Contractor to furnish all materials and complete work by August 1, 1940. Rail and highway facilities available for transportation of materails and equipment. Wages specified are: skilled labor, 75c. per hr.; semi-skilled, 60c. per hr.; and common, 50c. per hr.

BIDS: Five bids were received November 21, 1939, ranging from the contract low of $196,539 to $205,921. Engineer's estimate, $209,404.

LOW BIDDERS:

1. J. F. O'Connor & Sons, Inc., Fort Wayne, Ind. (contract) $196,539
2. U. R. Price & Co., Bloomington, Ind..... 200,558
3. Hart & Hart, Columbus, Ind..... 200.674

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavation, common	130,667 c. y.	$0.258	$0.26	$0.28
2. Special borrow	3,770 c. y.	.30	.33	.32
3. Grade B special borrow	850 c. y.	1.25	2.00	2.75
4. Overhaul — one balance	4,942 c. y.	.06	.07	.12
5. Overhaul — two balance	1,529 c. y.	.10	.10	.14
6. Conc., struct.; spec. Cl. D	16.8 c. y.	35.00	26.00	25.00
7. Conc., structures, Cl. D	616.3 c. y.	26.00	23.00	25.00
8. Reinf. steel, structures	134,563 lb.	.046	.05	045
9. Finish shoulders and ditches	26,160 l. f.	.15	.18	.14
10. Sodding (fertilized)	51,964 s. y.	.22	.16	.18
11. Aggregate, sub-surface drains	195 c. y.	2.35	2.90	2.90
12. Riprap	25 s. y.	3.00	3.00	3.50
13. Paved side ditch	8,211 l. f.	.90	.90	.90
14. Monument, Type C	1 ea.	10.00	10.00	10.00
15. Place r.-o.-w. markers	154 ea.	.80	.90	1.00
16. Broken concrete riprap	135 s. y.	1.50	1.60	1.10
17. Special paved side ditch	1,983 l. f.	1.80	1.65	1.10
18. Guide posts	117 ea.	1.35	1.35	1.50
19. Seeding (fertilized)	19 ac.	32.00	30.00	35.00
20. Honeysuckle planting	21,416 s. y.	.19	.16	.15
21. 12-in. corr. metal pipe	330 l. f.	1.15	.90	1.09
22. 15-in corr. metal pipe	116 l. f.	1.30	1.15	1.32
23. 18-in. corr. metal pipe	40 l. f.	1.60	1.50	1.78
24. 24-in corr. metal pipe	24 l. f.	2.40	2.85	3.05
25. 24-in. pipe	24 l. f.	2.40	2.85	3.00
26. 6-in. sewer pipe	226 l. f.	.90	.75	.70
27. 8-in. sewer pipe	80 l. f.	1.10	.85	.71
28. 10-in. sewer pipe	80 l. f.	1.25	1.00	.87
29. 12-in. rein. conc. pipe	20 l. f.	.75	.80	.63
30. 15-in. rein. conc. pipe	510 l. f.	.70	.95	.65
31. 18-in. rein. conc. pipe	292 l. f.	1.05	1.10	.85
32. 24-in. R.C., V.C., C.I., or conc. pipe	330 l. f.	3.00	2.90	3.05
33. 36-in R.C., C.I., or C.M. pipe	60 l. f.	5.90	5.90	13.75
34. 6-in. perf. corr. met. pipe, subsurface drains	40 l. f.	1.50	.85	1.05
35. Bit. coated perf. corr. met. sewer pipe, subsurface drains, 6-in.	240 l. f.	.70	.75	.65
36. Perf. corr. met. sewer pipe for subsurface drains, 6-in.	1,020 l. f.	.70	.75	.65
37. Reinf. concrete pavement	54,536 s. y.	1.68	1.79	1.785
38. Reinforcing steel, pavement	247 lb.	.06	.06	.06
39. Expansion joints, Type A-5 or D	4,191 l. f.	.35	.35	.33
40. Expan. joints, 1-in. cork, rubber or fiber	130 l. f.	.50	.35	.33
41. Contraction joints, type A-5 or D	8,068 l. f.	.25	.25	.23
42. Monuments, type D	4 ea.	5.00	4.00	5.00
43. Chemical stabilized mixture for public road, private drive and mail box approaches	2,032 tons	3.00	3.80	2.60

HIGHWAYS, NEW MEXICO

OWNER: New Mexico State Highway Department, Santa Fe, N. Mex., E. L. Stockton, Albuquerque, district engineer.

PROJECT: Construction of State Aid Projects 146 and 147 in San Juan and McKinley Counties on U. S. Route 666 between Gallup and Shiprock. Approximate length 82.6 miles. Consists of minor relocations, drainage structures, base course surfacing and single penetration top.

CONDITIONS: Contract must be completed in 350 weather working days. Wage rates on the job are: skilled, $1.00 to $1.25 per hr.; semi-skilled, 45c. to $1.00 per hr.; and unskilled, 40c. per hr.

BIDS: Ten bids were opened on July 28, 1939, rangin from the contract low of $405,301 to $488,864. Engineer estimate $391,021.

LOW BIDDERS:

1. W. T. Bookout, Las Vegas, N. Mex. (contract) $405,30
2. A. O. Peabody, Santa Fe, N. Mex..... 407,92
3. L. R. Allison, Albuquerque, N. Mex..... 437,97

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remove drainage struct...	L.S.	$800.00	$500.00	$3,000.00
2. Remove obstructions.....	L.S.	200.00	100.00	5,000.00
3. Unclass. excavation.....	172,638 c. y.	.11	.10	.40
4. Excav., pipe culverts.....	889 c. y.	1.00	1.50	2.00
5. Overhaul.....	350,524 sta. y.	.02	.01	.02
6. Haul.....	69,825 ‡ mi. y.	.04	.04	.08
7. Two course surfacing.....	354,797 ton	.50	.56	.46
8. Cl. B conc., headwalls....	2 c. y.	50.00	30.00	30.00
9. Reinforcing steel.....	68 lb.	.20	.10	.12
10. 24-in. rein. conc. pipe.....	4,228 l. f.	3.00	2.70	3.00
11. 30-in. rein. conc. pipe.....	1,004 l. f.	4.25	4.00	4.25
12. 36-in. rein. conc. pipe.....	1,352 l. f.	6.50	5.50	5.75
13. 48-in. rein. conc. pipe.....	32 l. f.	15.00	10.00	9.00
14. Obliterate old road.....	1.903 mi.	100.00	100.00	50.00
15. Grouted riprap.....	190 c. y.	10.00	10.00	20.00
16. Rock and wire check dams	38 c. y.	9.00	6.00	12.00
17. Compacting embankment.	94 hr.	5.00	3.00	10.00
18. Watering.....	11,191 M gal.	3.50	1.00	.50
19. Rolling.....	4,943 hr.	2.50	1.00	.50
20. Asph. road oil, (MC-1)...	9,326 bbl.	4.10	4.00	6.00
21. Cover material.....	22,546 ton	2.00	3.00	1.70
22. Asphalt.....	9,203 bbl.	3.60	4.00	5.50

HIGHWAYS, VERMONT

OWNER: Vermont State Highway Department, H. E. Sargent, Chief Engineer, Montpelier, Vt.; W. V. Kallio, Readsboro, Vt., engineer.

PROJECT: Grading, base, drainage and surfacing Whitingham-Readsboro Road, beginning 2.000 ft. west of Whitingham-Readsboro Town Line and extending to steel bridge over Deerfield River. Crushed stone mixed-in-place surface course with cut-back asphalt and prime coat of refined tar.

CONDITIONS: Contract awarded to low bidder June 9, to be completed by October 15, 1939. Material to be supplied by contractor. Rail and highway transportation available. Wage rates on project are: Skilled labor, 60c. per hr.; semi-skilled, 45c. per hr.; and common, 40c. per hr.

BIDS: Five bids were received on May 26, ranging from the contract low of $34.443 to $45,400.

LOW BIDDERS:

1. The Lane Constr. Corp., Meriden, Conn. (contract) $34,443
2. A. J. Maxymillian, Inc., North Adams, Mass... 36,592
3. Samuel B. Easton, Albany, N. Y..... 39,948

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Solid rock excav	3,300 c. y.	$2.00	$1.35	$2.00
2. Common excav	7,900 c. y.	.40	.40	.38
3. Borrow	37,900 c. y.	.25	.375	.38
4. Trench excav., earth	475 c. y.	1.50	1.10	1.00
5. Trench excav., rock	200 c. y.	3.50	2.00	4.00
6. Patrol maintenance	3 days	15.00	10.00	25.00
7. Sub-base, gravel	5,625 c. y.	.55	.70	.70
8. Cr. stone, MIP surf. crse	540 c. y.	5.00	3.00	4.00
9. Refined tar	2,570 gal.	.14	.15	.15
10. Cutback asphalt	10,345 gal.	.10	.13	.13
11. Cl. A. conc	25 c. y.	25.00	20.00	20.00
12. Reinf	2,010 lb.	.05	.04	.06
13. Cement rubble masonry	70 c. y.	8.00	9.00	10.00
14. Plain rubble paving	20 c. y.	5.00	5.00	5.00
15. 12-in. C. I. pipe	60 l. f.	1.75	2.44	1.50
16. 18-in. C. I. pipe	198 l. f.	2.75	4.34	2.50
17. 24-in. C. I. pipe	66 l. f.	6.00	6.86	5.00
18. 12-in. Corr. galv. metal pipe, AC.	24 l. f.	1.50	1.37	1.50
19. 15-in. Corr. galv. metal pipe, AC.	22 l. f.	1.75	1.67	1.75
20. 18-in. Corr. galv. metal pipe, AC.	200 l. f.	2.00	1.97	2.25
21. 24-in. Corr. galv. metal pipe, AC.	48 l. f.	3.00	3.16	3.25
22. Relay pipe culv	40 l. f.	.50	.60	.50
23. Remove pres. superstruct.	L. S.	50.00	105.00	100.00
24. Std. Und. with 6-in. P.C.G.M.P., AC	900 l. f.	1.00	.90	1.25
25. Cable guard rail	3,440 l. f.	.50	.45	.50
26. Anchors, cable guard rail	24 ea.	12.00	8.50	10.00
27. Guide posts	8 ea.	2.00	2.00	2.00
28. Erection of markers	1 ea.	15.00	2.50	15.00
29. Boundary markers	20 ea.	5.00	4.00	5.00
30. Drop inlet grates	1 ea.	10.00	7.00	20.00
31. Corr. galv. metal, D.I., A.C. with grates	2 ea.	35.00	42.00	35.00
32. Creo. timber curb	1,296 l. f.	.25	.20	.25

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PROFITABLE SCRAPER BUY

1

TE THE SCRAPER
E THIS SCORE CARD

ficient scraper profits naturally depend ving a good scraper to begin with. The r the scraper, the better your chances king money with it. To help you se- he best, we have developed this scraper list. Use it as an aid to evaluating ers . . . for more profitable operation.

Check These Important Profit-Assuring Points	LeTourneau Rating
1 Will the scraper you are considering handle all materials—from easy loam to broken rock?	Yes, proved by thousands of jobs.
(a) Does it have a positive ejection tailgate so the bowl is completely cleaned of wet, sticky materials on every trip?	Yes, 100% positive ejection.
2 Does it operate by means of safe, fast-acting, flexible cable control?	Yes.
(a) . . . so the operator can instantly lift the blade to prevent tractor stalling when encountering rocks or stumps?	Yes, split-second control.
(b) . . . so you can operate it equally well in sub-zero weather or tropical heat?	Yes, cable is unaffected by heat or cold.
(c) . . . so you can easily interchange the tractor with such other tools as 'Dozers, Rooters and Cranes?	Yes.
3 Has it large diameter tires for light draft and flotation, and of sufficient capacity to handle heavy loads?	Yes.
(a) Is it built so extra tires can be added to give even more flotation where needed on jobs in unusually soft materials?	Yes, and without re-designing scraper.
4 Has it been job proven by customers the world over?	Yes, used in 80 countries.
5 What is the manufacturer's generally recognized position in the scraper industry?	First.
6 Can the manufacturer prove by a weight demonstration that the scraper will consistently deliver and exceed its full claimed capacity? In short—does it deliver "honest yardage"?	Yes, LeTourneau pioneered accurate "weight" tests.
7 Are sales and service facilities readily available the world over and through a well-trained dealer organization?	Yes, from "Caterpillar."
8 Is the line complete enough so I can select the right size to fit my job?	12 sizes—3 to 33 yds.—5 cutting widths.
(a) Are the big capacity models designed to take fullest advantage in pay yards of the hauling power of today's bigger powered tractors?	Yes, by pusher loading.
9 How does list price compare with other scrapers on the basis of comparable tires, blades and net cost per yard of heaped capacity?	Cheapest! But see your dealer.

2

ASK FOR JOB PROOF
Insist on a Certified Weight Demonstration

After you've checked scrapers point by point, if you're still doubtful, ask for a job demonstration. To eliminate guesswork, insist that the scraper loads be weighed. Only by accurate weight can you determine the actual pay load of a scraper. Your "Caterpillar" and LeTourneau dealer will gladly prove to you . . . by weighed loads . . . the superiority of LeTourneau Carryalls. For "lowest net cost per yard" . . . see him NOW!

For lowest net cost per yard . . .

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ANGLEDOZERS*, BULLDOZERS, ROOTERS*, POWER CONTROL UNITS, PUSHDOZERS
DRAG SCRAPERS, SHEEP'S FOOT ROLLERS, CRANES, BUGGIES*, TREEDOZERS

*Name Reg. U. S. Pat. Off.

R. G. LeTOURNEAU, INC.
Peoria Illinois - - - Stockton, Calif.
Cable Address: "BOBLETORNO"

EAST RIVER DRIVE NEW YORK

OWNER: Department of Borough Works, President, Manhattan Borough, New York, N. Y. E. Rizac, engineer.

PROJECT: Construction of roadway, curbs, sidewalks, promenade and appurtenant work to connect portion of East River Drive now under construction through Carl Shurz Park with existing pavement at 93rd Street. Located on East River Drive from East 90th St. to East 93rd St. Involves relaying hexagonal block pavement; removing existing roadway pavement; drainage facilities; curbs; sidewalks; granite block paving; lighting system; fire and police facilities; and automatic traffic recording system.

CONDITIONS: Contractor will not have exclusive storage space at location of work as other contractors are in process of constructing works in vicinity. Highway, rail and water transportation facilities available. Fire alarm posts, granite curbing (salvaged), 6-ft. fence (used), and time switches are to be furnished by city. Project to be completed by May 22, 1940. Wage rates are: skilled, $1.15 to $2.12½ per hr.; semi-skilled, $1.00 to $1.50; and common, 87½c. to $1.50 per hr.

BIDS: Ten bids were received October 31, 1939, ranging from $104,278 to $165,430.

LOW BIDDERS:

1. Madden & Lane, Long Island City, N. Y. (contract) $104,278
2. Barry Cont'g. Co., Laurelton, N. Y. 104,854
3. Frank Mascali & Son, New York, N. Y. 105,098

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavating and grading	5,500 c. y.	$0.50	$0.35	$1.00
2. Sewer excavation	300 c. y.	1.00	1.00	1.00
3. Inlets, complete	10 ea.	80.00	125.00	150.00
4. Basins, new castings	2 ea.	110.00	200.00	150.00
5. Basins, salvaged castings	1 ea.	100.00	150.00	100.00
6. 12-in. vitr. pipe drains	550 l. f.	1.70	1.50	2.50
7. Fire alarm post and conduit	L. S.	300.00	331.00	500.00
8. Cl. B conc. for police facilities	10 c. y.	13.00	25.00	20.00
9. 2-in. galv. copper brg. steel pipe	540 l. f.	1.50	1.975	2.00
10. New steel curb	5,850 l. f.	2.25	1.31	2.75
11. Conc. fndn., pavement	2,200 c. y.	11.50	9.00	6.85
12. Sheet asph. paving, (excl. appr.)	12,700 s. y.	1.33	1.60	1.40
13. Curb redressed and reset	250 l. f.	2.00	1.25	1.50
14. Sheet asph. pav. (adjust. areas)	140 s. y.	1.33	1.60	1.40
15. Concrete sidewalks	2,400 s. f.	.28	.25	.24
16. Public lighting system	L. S.	6,675.00	9,773.00	9,500.00
17. 3½ ft. w.i. fence, (sign W)	1,520 l. f.	4.55	5.48	5.20
18. 3½-ft. fence, (sign T)	120 l. f.	5.25	3.95	6.00
19. 6-ft. fence, used. (sign X)	350 l. f.	2.20	1.35	1.60
20. Concrete curb	1,800 l. f.	.80	.90	1.00
21. Granite block pavmt., with soil joints.	3,870 s. y.	1.45	2.50	1.00
22. Stabil. limestone screen. fndn.	180 c. y.	8.70	2.00	6.00
23. Bitum. paving, sidewalk	500 s. y.	.75	1.80	.60
24. Wood and conc. benches	10 ea.	110.00	15.00	150.00
25. Relocate trees	2 ea.	25.00	50.00	35.00
26. Plant new trees	49 ea.	48.00	55.00	55.00
27. Steel reinf., pavmt	13,500 lb.	.10	.12	.10
28. Hexagonal asph block pavmt., used blocks	1,750 s. y.	1.85	2.00	1.50
29. Automatic traffic system	L. S.	3,100.00	4,367.00	5,000.00

HIGHWAYS, WYOMING

OWNER: Wyoming State Highway Commission, Cheyenne, Wyo. W. B. Schilling, Casper, Wyo., engineer.

PROJECT: Base course surfacing and oil treatment by road-mix method of 18.667 miles of the Lander-Muddy Gap Road, Fremont County, Wyoming. 30′ subgrade, 28′ oil mat.

CONDITIONS: Work must be completed 60 working days commencing 20 days after notice of award. Transportation by highway. Materials to be furnished by contractor. Due to the sandy condition of sub-grade for about 8 miles, no base course is to be used. Sub-grade to be treated with MC-2, then oil mat to be put down. Labor rates: skilled, $1.12½ per hr. min.; semi-skilled, 65c. per hr. min.; common, 55c. per hr. min.

BIDS: Six bids were received June 6, ranging from the contract low of $85,151 to the high of $97,053. Engineer's estimate, $89,394.

LOW BIDDERS:

1. Summit Constr. Co., Rapid City, S. Dak. (contract) $85,151
2. Northwestern Engineering Co., Rapid City, S. Dak. 85,921
3. W. W. Clyde & Co., Springfield, Utah 86,294

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Pit run hvy. base course	1,100 ton	$0.45	$0.55	$0.50
2. Pit run grav. base course	600 ton	.50	.65	.50
3. Cr. grav. base course	8,200 ton	.53	.50	.40
4. Pit run grav. surf. (top)	15,800 ton	.47	.45	.55
5. Cr. gravel surf. (top)	6,810 ton	.60	.50	.45
6. Watering	170 M gal.	3.00	3.00	2.00
7. Roller operation	70 hr.	5.00	4.00	4.00
8. Base treatment (MC-2)	212,500 gal.	.08	.08	.09
9. Seal coat	83,000 gal.	.12	.08	.09
10. Slow cur. liq. asph	258,000 gal.	.06	.088	.08
11. Process. roadway	317,050 s. y.	.06	.054	.05
12. Shap. and tamp. curb	28,750 l. f.	.10	.12	.15
13. Shap. and tamp. spillway	350 l. f.	1.00	.30	.30
14. Embank. protectors	12 ea.	30.00	20.00	15.00
15. 8 in. C. M.P.	174 l. f.	1.60	1.40	1.25
16. Cl. 1 riprap	20 c. y.	5.00	6.00	5.00
17. Port. snow fence	2,032 l. f.	.90	.60	.75
18. Excav.	600 c. y.	.60	.30	.40
19. Overhaul	1,500 c. y. sta.	.015	.015	.015

HIGHWAYS, MARYLAND

OWNER: Maryland State Roads Commission, Baltimore. D. P. Campbell, Towson, Md., engineer.

PROJECT: Grading, drainage, culvert and bridge construction along Philadelphia Road relocation from Northeast towards Elkton, in Cecil County, Md.

CONDITIONS: Project to be completed in 170 days. Contractor to furnish all materials. Rail facilities available for shipping materials. Wages on job are: skilled, 56c. per hr.; semi-skilled, 45c. per hr.; and common labor, 35c. per hr.

BIDS: Eight bids were received May 9, 1939 ranging from the contract low of $233,785 to $299,933.

LOW BIDDERS:

1. Waller Paving Co., Salisbury, Md. (contract) $233,785
2. C. J. Langenfelder & Son, Rosedale, Md. 241,054
3. Martin T. Firor, Baltimore, Md. 257,381

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	L.S.	$7,500.00	$6,000.00	$6,500.00
2. Class 1 excavation	406,700 c. y.	.20	.205	.205
3. Class 2 excavation	2,400 c. y.	.50	.50	.55
4. Class 3 excavation	1,025 c. y.	2.00	2.00	2.00
5. Class 4 excavation	1,500 c. y.	3.00	3.50	4.00
6. Borrow	108,000 c. y.	.24	.28	.24
7. Tamped fill	3,800 c. y.	.40	.50	.70
8. 6-in. gravel surf. crse	850 c. y.	1.00	1.00	1.75
9. Cl. A conc., surf. crse	2,775 c. y.	16.00	15.50	22.00
10. Cl. A conc., surf crse., balus	63 c. y.	50.00	60.00	50.00
11. Reinforcing bars	344,500 lb.	.04	.04	.04
12. Fabr. struct. steel	486,000 lb.	.05	.0485	.052
13. 15-in. rein. cem. conc. pipe	2,443 l. f.	1.25	1.35	1.30
14. 18-in. rein. cem. conc. pipe	1,018 l. f.	1.75	2.00	1.70
15. 24-in. rein. cem. conc. pipe	608 l. f.	2.50	2.50	2.50
16. 36-in. rein. cem. conc. pipe	121 l. f.	6.00	5.00	4.90
17. 8-in. cast iron pipe	50 l. f.	1.50	2.00	2.25
18. 12-in. asph. coat. cor. met. pipe	158 l. f.	1.25	1.25	1.40
19. 15-in. asph. coat. cor. met. pipe	555 l. f.	1.50	1.50	1.50
20. 24-in. asph. coat. cor. met. pipe	501 l. f.	2.50	2.25	2.40
21. 30-in. asph. coat. cor. met. pipe	146 l. f.	3.50	3.25	3.25
22. 36-in. asph. coat. cor. met. pipe	163 l. f.	5.00	4.00	4.00
23. 12-in. corr. metal pipe	391 l. f.	1.00	1.00	1.25
24. 15-in. corr. metal pipe	109 l. f.	1.25	1.10	1.35
25. 24-in. corr. metal pipe	40 l. f.	2.25	1.25	3.00
26. 15-in. 90-deg. cor. met. pipe elbow	5 ea.	6.00	4.50	4.50
27. 6-in. vitr. tile underdrain	500 l. f.	.60	.48	.50
28. 6-in. vitr. tile outlets	200 l. f.	.60	.48	.50
29. 5-in. Port. cem. conc. gutter (SC)	5,475 sa.	1.50	2.00	1.75
30. 8-in. Port. cem. conc. flumes (SC)	100 ea.	2.50	3.00	2.30
31. Riprap	640 ton	3.00	3.00	3.00
32. Prot. coat, conc. wk., Sta. 20	L.S.	50.00	60.00	80.00
33. Prot. coat, conc. wk., Sta. 117	L.S.	50.00	70.00	90.00
34. Expansion material, Sta. 231	L.S.	25.00	75.00	60.00
35. Expansion material, Sta. 237	L.S.	25.00	75.00	60.00
36. Trim existing ditches	500 l. f.	.20	.15	.20
37. Type H combination inlet	2 ea.	75.00	100.00	125.00
38. 8-in. perf. corr. met. pipe	500 l. f.	1.00	.80	1.00
39. Standard curb markers	8 ea.	20.00	20.00	38.00

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CULVERTS — You'll speed construction and cut costs with standard Toncan corrugated metal pipe in diameters from 6 to 84 inches. Gages No. 16 to No. 8—lengths up to 20 feet. Meets state and federal specifications. Costs less installed.

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Central Culvert Company	Alexandria, La.
Dominion Metal & Culvert Corp.	Roanoke, Va.
A. N. Eaton Metal Products Co.	Billings, Mont.
Eaton Culvert Co.	Grand Island, Neb.
H. V. Johnston Culvert & Equipment Co.	Aberdeen, S. D.
Empire State Culvert Corp.	Groton, N. Y.
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Jensen Bridge and Supply Co.	Sandusky, Mich.
H. V. Johnston Culvert Co.	Minneapolis, Minn.
Missouri Toncan Culvert Co.	Marshall, Mo.
Wm. E. Newman & Sons Co.	Ogden, Utah
Republic Steel Corporation	Indianapolis, Ind. / Philadelphia, Pa. / Canton, Ohio.
Thompson Mfg. Co.	Denver, Colo.
Tri-State Culvert Mfg. Co.	Memphis, Tenn.
Western Pipe & Steel Co.	San Francisco and Los Angeles, Calif.
Wisconsin Culvert Co.	Madison, Wis.
Tri-State Culvert & Pipe Co.	Atlanta, Ga.
Wyatt Metal & Boiler Works	Houston and Dallas, Texas

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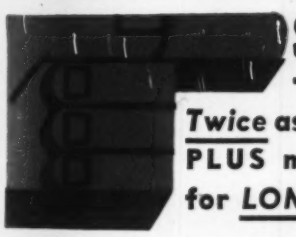

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PRODUCT OF REPUBLIC STEEL

PAVING AND STREETS, CHICAGO, ILLINOIS

OWNER: City of Chicago, Board of Local Improvements, J. P. Boyle, president; Arthur Engh, engineer.

PROJECT: Paving on South Laramie St., from Roosevelt Road to Lexington St. on a grade separation project. Total length about ½ mi. Includes concrete pavement, sidewalks, excavation, embankments, curb and gutter.

BIDS: Nine bids were received Apr. 14, 1939 ranging from the contract low of $99,110 to $107,004. Labor rates are as follows: skilled, $1.625 per hr.; common, $1.025 per hr.

LOW BIDDERS:

1. Robert R. Anderson Co., Chicago (contract).. $99,110
2. James A. Sackley, Chicago..... 99,978
3. Thomas McQueen, Chicago 100,903

Items	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excav	5,800 c. y.	$1.28	$1.48	$1.75
2. Embank (crushed limestone and cinders)	700 c. y.	1.90	1.24	2.00
3. Rock excav	50 c. y.	3.00	5.50	3.00
4. Embank. (Limestone screenings)	20,300 c. y.	1.59	1.77	1.80
5. P.C.C. Pav. 8-in	7,700 s. y.	1.92	1.88	1.92
6. P.C.C. Pav. (Spec. reinf. slab. var. thickness)	116 s. y.	2.61	2.64	2.50
7. Pavement fabric	7,700 s. y.	.21	.20	.16
8. P.C.C. sidewalks (reinf.)	22,750 s. f.	.35	.30	.25
9. P.C.C. sidewalks (plain)	7,150 s. f.	.28	.25	.25
10. 8-in. storm sewers (3' to 12' cover)	380 l. f.	1.60	1.60	1.50
11. 48-in. conc. catchbasins (type 5 frames & open lids)	8 ea.	132.00	140.00	150.00
12. Catchbasins, adjusting	2 ea.	18.00	18.00	10.00
13. 36-in. manholes (type 1 frame & closed lid)	1 ea.	190.00	99.00	200.00
14. Type 1 frame & closed lid	2 ea.	17.00	18.00	15.00
15. Conc. gutter type 1	530 l. f.	1.16	1.08	1.60
16. Conc. gutter type 5	32 l. f.	1.34	1.23	5.75
17. Conc. curb & gutter type 2 (white cement curb)	60 l. f.	1.36	1.33	1.20
18. Comb. conc. curb & gutter type 3	1,140 l. f.	.93	.86	.80
19. Comb. conc. curb & gutter type 3 (white cement curb)	2,020 l. f.	1.30	1.29	1.20
20. Class X conc. retain. wall	16 c. y.	30.00	19.80	35.00
21. Reinf	51,400 lb.	.05	.055	.05
22. Catchbasins adj. (incl. type 5 frames open lids)	2 ea.	31.00	36.00	20.00
23. Manholes, reconst	2 ea.	60.00	37.50	65.00
24. Ctr. curb type "A" (white) precast	550 l. f.	6.96	6.40	7.00
25. Ctr. curb marker type "D (black) precast	550 l. f.	.91	.92	1.00
26. Traffic marker type "G" (black & white) precast	350 l. f.	7.25	6.05	5.30
27. Lane marker type "C" (black) precast	1,840 l. f.	1.10	1.11	.95
28. Long bit. premolded exp. jt	1,100 s. f.	.30	.20	.20
29. Comb. conc. curb & gutter type 4	110 l. f.	1.20	1.23	1.00
30 Std. portland cement	3,960 bbls.	2.35	2.30	2.20
31. White portland cement	70 bbls.	8.80	8.10	7.60
32. Top soil	700 c. y.	2.25	1.95	2.00
33. Ctr curb type "B" (white) poured in place	40 l. f.	18.00	2.90	20.00
34. Fill. exist. catchbasins	9 ea.	5.00	11.00	4.50
35. P.C.C. sidewalks (spec. reinf. conc. slabs)	715 s. f.	.42	.46	.30

HIGHWAYS, NEW HAMPSHIRE

OWNER: New Hampshire State Highway Department, Concord, N. H.; John O. Morton, engineer.

PROJECT: Improving 3.648 miles of East Side Road in town of Gorham, Coos County, N. H. Most of project is 24 ft. wide, but .22 miles within urban limit involves improvement of two 16-ft. lanes. Surface treated crushed gravel type construction. Surface 4-in. thick.

CONDITIONS: Contractor to furnish all materials and complete project in 150 working days. Rail and highway transportation facilities available. Wage rates specified are: skilled, 75c. per hr.; semi-skilled, 50c. per hr.; and common, 40c. per hr.

BIDS: Eight bids were opened September 21, 1939, ranging from the contract low of $98,663 to $122,179.

LOW BIDDERS:

1. John Iafolla Constr. Co., Dedham, Mass. (contract) $98,663
2. Littleton Constr. Co., Littleton, N. H..... 99,521
3. W. H. Hinman, Inc., North Anson, Me..... 102,334

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remove trees	130 ea.	$15.00	$5.00	$5.00
2. Remove abandoned rd. surf.	12,800 s. y.	.05	10	10
3. Unclassified excavation	44,993 c. y.	.32	.30	.30
4. Uncl. trench excav	2,630 c. y.	1.50	.75	.90
5. Uncl. channel excav	899 c. y.	.50	.30	.40
6. Uncl. struct. excav	644 c. y.	3.00	2.00	1.75
7. Earth borrow	1,000 c. y.	.25	.20	.30
8. Gravel borrow	14,500 c. y.	.32	.35	.35
9. Fine grading	120,500 s. y.	.02	.03	.025
10. Grav. borrow base course	23,200 c. y.	.32	.35	.40
11. Crushed grav. surf. crse	6,550 c. y.	.90	1.00	1.75
12. Cl. A bitum. surf. treatment	38,000 gal.	.15	.14	.14
13. Temp. bridge, 1-way traffic	L. S.	500.00	200.00	200.00
14. Remove superstructure	L. S.	500.00	500.00	350.00
15. Remove substructure	832 c. y.	1.50	1.00	1.75
16. Class A concrete	823 c. y.	18.00	17.00	17.00
17. Class B concrete	5 c. y.	18.00	16.00	17.00
18. Class C concrete	37 c. y.	16.00	16.00	17.00
19. Reinforcing steel	91,853 lb.	.0475	.05	.05
20. Mortar rubble masonry	68 c. y.	10.00	10.00	10.00
21. 12-in. std. str. rein. conc. pipe	324 l. f.	1.00	1.00	1.20
22. 15-in. std. str. rein. conc. pipe	544 l. f.	1.40	1.40	1.60
23. 18-in. std. str. rein. conc. pipe	72 l. f.	1.75	1.70	1.90
24. 24-in. std. str. rein. conc. pipe	172 l. f.	3.00	2.75	3.00
25. 30-in. std. str. rein. conc. pipe	176 l. f.	4.25	5.50	4.50
26. 36-in. std. str. rein. conc. pipe	64 l. f.	5.50	6.00	5.50
27. 42-in. std. str. rein. conc. pipe	76 l. f.	7.00	7.00	6.50
28. 12-in. vitr. clay pipe	152 l. f.	.75	2.00	.80
29. 8-in. spiral c.i. culv. pipe	874 l. f.	1.50	1.00	1.75
30. Bitum. coated corr. met. pipe	160 l. f.	1.00	1.00	1.25
31. Bridge railing, B	166 l. f.	5.00	4.00	3.00
32. Plant mix asph. bridge floor	26 ton	12.00	12.00	14.00
33. Paint waterproofing	216 s. y.	.40	.50	.20
34. Stone fill, B	130 c. y.	1.00	1.00	2.00
35. Straight granite curbing	740 l. f.	1.75	1.75	1.50
36. Curved granite curbing	30 l. f.	2.50	2.75	2.00
37. Straight rock faced gran. curb	1,635 l. f.	1.60	1.50	1.75
38. Curved rock faced gran. curb	130 l. f.	2.10	2.25	2.25
39. Cable guard rail (wood posts)	4,930 l. f.	.40	.38	.40
40. Wood guard rail (single rail)	210 l. f.	.60	.75	.50
41. Wood guard rail (double rail)	800 l. f.	.80	1.00	.60
42. Steel plate guard rail	270 l. f.	1.30	2.00	1.50
43. Anchorages	44 ea.	10.00	10.00	9.00
44. Wood post markers	55 ea.	1.50	1.50	1.25
45. Catch basin, type A	29 ea.	85.00	75.00	60.00
46. Manholes	10 ea.	75.00	100.00	60.00
47. Rebuild manholes	17 ea.	25.00	50.00	25.00
48. Drop inlets, type B	10 ea.	60.00	50.00	60.00
49. Granite curb inlets	21 ea.	16.00	13.00	15.00
50. Metal drop inlets	13 ea.	20.00	15.00	15.00
51. Curb board	1,875 l. f.	.10	.10	.06
52. 3-in. pipe sleeve	100 l. f.	.75	1.00	.75
53. 3-in. conc. sidewalk	875 s. y.	1.50	2.00	2.00
54. Relay concrete sidewalk	300 s. y.	.50	2.00	1.25
55. Stock wire fence	6,000 l. f.	.15	.15	.15
56. Balanced stone wall	200 l. f.	.15	1.00	.40
57. Project markers	5 ea.	10.00	10.00	10.00
58. Maintain traffic	19,262 l. f.	.05	.05	.05
59. Loam, 2-in. deep	12,800 s. y.	.10	.20	.12
60. Loam, 4-in. deep	360 s. y.	.15	.30	.16
61. Loam, 6-in. deep	6,200 s. y.	.15	.30	.22
62. Sod	355 s. y.	.70	1.00	.50
63. Fertilizer for grasses	5,100 lb.	.08	.10	.05
64. Grass seed	430 lb.	.50	1.00	.50
65. 12-in. c. i. water pipe	172 l. f.	2.50	3.00	3.00

STREETS, CALIF.

OWNER: Long Beach, Calif.; R. M. Dorton City Mgr.

PROJECT: Grading, decomposed granite base, asphaltic concrete and concrete surfacing, concrete curbing gutters, on 1.3 miles of South St., from Dairy Ave. to Chestnut Ave. Transportation by rail, highway and water is available.

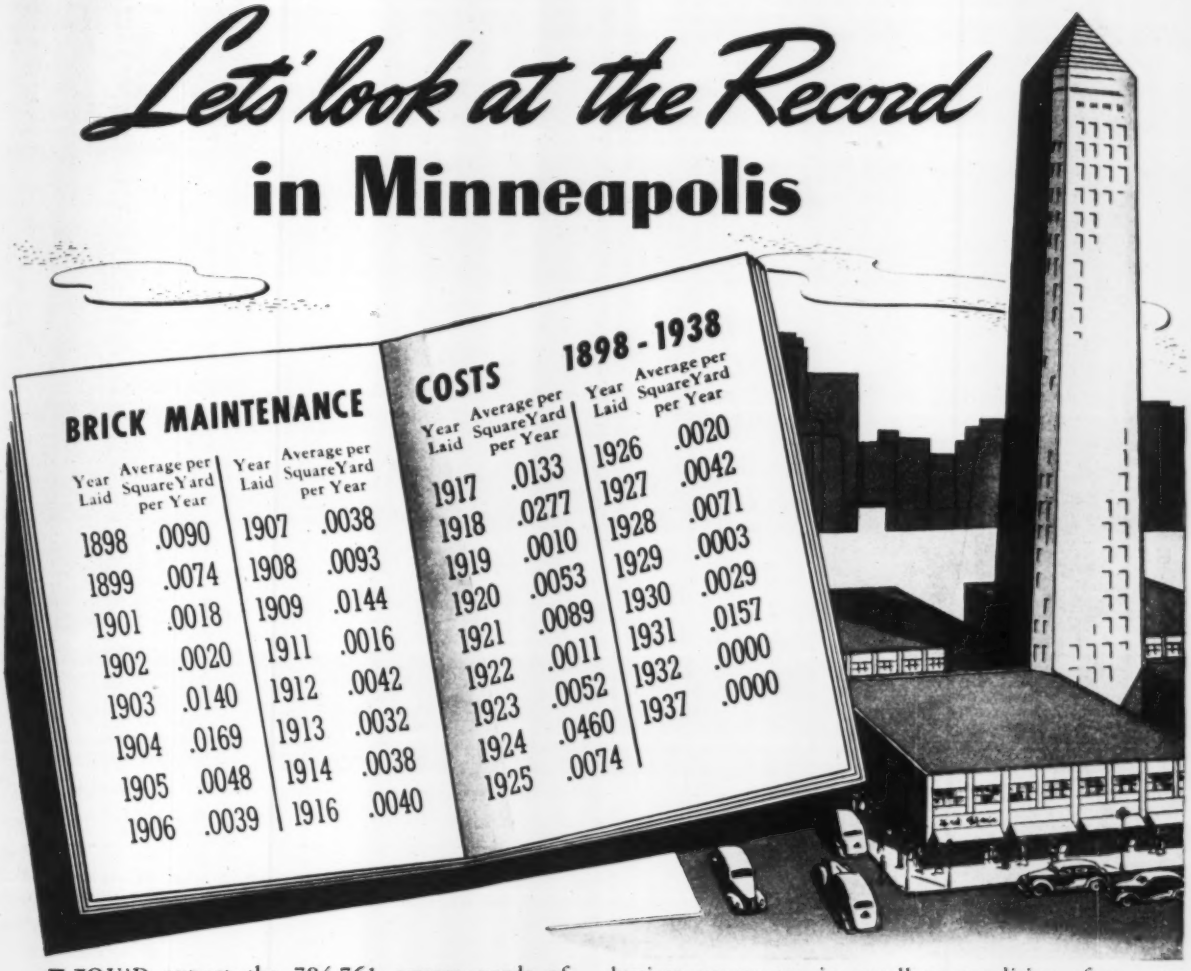
BIDS: Five bids were received February 10, 1939 ranging from the contract low of $28,774 to $32,630. Labor rates are as follows: Skilled, $1.25 per hr.; semi-skilled, $.75 per hr.; common 62½c. per hr.

LOW BIDDERS:

1. Vido Kovacevich, South Gate (contract).... $28,774
2. Ansco Constr. Co. Long Beach..... 30,063
3. Sully-Miller Contracting Co., Long Beach.... 31,627

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Conc. curb	351 l. f.	$0.45	$0.50	$0.50
2. Comb. curb, gutter 6" x 1' 6"	351 l. f.	.68	.65	.65
3. Comb. curb, gutter 6" x 6'	5,862 l. f.	1.10	1.20	1.30
4. 6-in. gutter	13,584 s. f.	.15	.16	.17
5. 8-in. gutter	9,220 s. f.	.21	.21	.22
6. Conc. sidewalk	273 s. f.	.15	.14	.20
7. 8-in. conc. pav	10,226 s. f.	.17	.20	.22
8. Remov. conc	393 c. y.	2.50	2.00	3.00
9. Asph conc. base	2,640 tons	2.47	2.60	2.85
10. Asph conc. type A surf	1,342 tons	2.60	2.85	3.05
11. Decomposed granite base	2,521 tons	1.10	1.00	1.20
12. Subgrade for 3-in. asph. conc. pav	130 s. y.	.12	.10	.15
13. Subgrade for 6-in R. C. conc. pav	11,603 s. y.	.10	.07	.05
14. Grading	L. S.	1,200.00	1,576.00	500.00

Let's look at the Record in Minneapolis



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BRICK

FOR NEW CONSTRUCTION OR RESURFACE WORK

STREET PAVING
DULUTH, MINNESOTA

OWNER: City of Duluth, Minn.; T. F. McGilvray, city engineer, Duluth.

PROJECT: Improving and reinforced-concrete paving Forty-Fifth Avenue East from Superior Street to Glenwood Street, Duluth, Minn.

CONDITIONS: Contractor to furnish all materials and complete work by November 20, 1939. Rail, highway and water transportation facilities available. Minimum wages specified are: skilled, 67½c. per hr.; semi-skilled, 62½c. per hr.; and common, 62½c. per hr.

BIDS: Six bids were received Aug. 23, 1939, ranging from the contract low of $48,700 to $53,720.

LOW BIDDERS:

1. John Wiinamaki, Duluth, Minn. (contract)... $48,700
2. Central States Constr. Co., Crosby, Minn..... 50,187
3. Arrowhead Constr. Co., Duluth, Minn..... 51,938

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	3,600 c. y.	$0.35	$0.50	$0.42
2. Rock excavation	30 c. y.	.35	.50	.42
3. Earth excav., trench	200 c. y.	1.35	1.75	1.50
4. Rock excav., trench	5 c. y.	1.35	6.00	1.50
5. Approved backfill	100 c. y.	.90	1.25	1.00
6. Cold patch bitum. mixture	10 c. y.	10.00	10.00	10.00
7. Remove conc. pavement	60 s. y.	2.50	1.00	2.00
8. Reinf. conc. pavement	19,700 s. y.	2.10	2.16	2.25
9. Remove conc. crosswalk	50 s. y.	.50	1.00	.20
10. Remove concrete walk	80 s. y.	.25	.30	.20
11. Concrete walk	700 s. f.	.25	.22	.20
12. Adjust manholes	15 ver. f.	2.00	5.00	1.00
13. Remove concr. header	375 l. f.	.30	.30	.10
14. Concrete header	720 l. f.	.40	.25	.35
15. Remove concr. curb	200 l. f.	.25	.25	.10
16. 6-in. integral crub	8,900 l. f.	.25	.22	26
17. 10-in. reinf. conc. pipe	200 l. f.	.95	.90	.85
18. 12-in. reinf. conc. pipe	150 l. f.	1.00	1.15	1.00
19. 15-in. reinf. conc. pipe	550 l. f.	1.40	1.30	1.25
20. 21-in. reinf. conc. pipe	50 l. f.	2.15	2.00	2.25
21. Remove 12-in. plank culvert	60 l. f.	.25	.50	.15
22. Remove 4-ft. plank crossing	60 l. f.	.25	.15	.15
23. Remove, relay plank walk	100 l. f.	.50	.35	.15
24. Lumber, in place	1 M.b.m.	60.00	30.00	55.00
25. Remove inlets	20 ea.	5.00	5.00	5.50
26. Remove and replace No. 27 inlets	18 ea.	18.00	25.00	35.00
27. No. 27 inlets	20 ea.	25.00	25.00	24.00
28. Manholes	2 ea.	65.00	60.00	65.00
29. Monument boxes in place	6 ea.	6.00	10.00	8.00
30. Reinforcing bars	100 lb.	.10	.05	.05
31. Manhole rings and covers	3 ea.	20.00	15.00	15.00

HIGHWAYS, RHODE ISLAND

OWNER: Division of Roads and Bridges, Department of Public Works, Rhode Island and Providence Plantations.

PROJECT: Construction of state roads in town of Jamestown. Involves paving of Narragansett Avenue from Canonicus Avenue to North Road with 6-in. bituminous macadam, 34-ft. wide; and North Road from Round Swamp to Eldred Avenue with 8-in. bituminous macadam, 20-ft. wide.

CONDITIONS: All materials such as gravel for foundation, crushed stone for pavement, etc., has to be delivered by ferry or barge as there are no suitable roadbuilding materials on island of Jamestown. Contractor to furnish all materials and complete entire project by June 30, 1940. Minimum wage rates are: skilled labor, 75c. per hr.; semi-skilled, 60c.; and common labor, 50c. per hr.

BIDS: Six bids were opened January 9, 1940, ranging from the contract low of $99,098 to $130,346.

LOW BIDDERS:

1. Callan Constr. Co., Briston, R. I. (contract).. $99,098
2. M. A. Gammino Constr. Co., Providence, R. I. 100,000
3. P. Romano & Son, Warren, R. I..... 101,962

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	4.37 ac.	$50.00	$50.00	$80.00
2. Cut and remove trees	1 ea.	50.00	50.00	15.00
3. Earth excavation	10,635 c. y.	.33	.25	.50
4. Marsh excavation	2,096 c. y.	.25	.30	.40
5. Trench earth excav	543 c. y.	.60	1.00	.80
6. Rock or ledge excav	150 c. y.	2.00	2.00	2.00
7. Trench ledge excav	233 c. y.	3.00	3.00	2.50
8. Remove, dispose exist. pave	922 s. y.	.20	.25	.35
9. Scarify, reshape exist. pave	4,431 s. y.	.10	.25	.15
10 Trim and fine grade	56,462 s. y.	.02	.03	.05
11. Strip and pile loam	1,580 c. y.	.35	.40	.50
12. Replace loam	1,580 c. y.	.40	.40	.80
13. Furn. and place loam	866 c. y.	1.00	1.00	1.00
14. Gravel foundation, type A	16,638 c. y.	1.40	1.65	1.45
15. Cr. stone or gravel base	6,366 ton	2.38	2.25	2.30
16. Filler for base, (sand)	1,626 c. y.	1.40	.75	1.55
17. Cr. stone top for B. M	5,251 ton	3.20	2.85	2.85
18. Bitum. binder (CA-3)	72,933 gal.	.085	.10	.085
19. Bitum. material, RF, T-2	7,730 gal.	.12	.15	.13
20. 12-in. Class A pipe, rein. conc	546 l. f.	1.30	1.15	1.25
21. 18-in. Class A pipe, rein. conc	118 l. f.	2.10	2.00	2.13
22. 24-in. Class A pipe, rein. conc	44 l. f.	3.00	3.00	3.20
23. 18x12-in. T-conn., rein. conc	2 ea.	15.00	15.00	16.00
24. 12-in. copper steel pipe, Cl. B	793 l. f.	.80	.65	.68
25. 18-in. copper steel pipe, Cl. B	24 l. f.	1.50	1.45	1.60
26. 24-in. copper steel pipe, Cl. B	74 l. f.	2.50	2.50	2.73
27. 30-in. copper steel pipe, Cl. B	20 l. f.	4.50	3.75	4.60
28. Asph. coated corr. met. pipe	54 l. f.	1.50	1.35	1.50
29. Remove, relay 12-in. corr. met. pipe	74 l. f.	.50	.30	.40
30. Drop inlets	5 ea.	60.00	60.00	59.00
31. Reconstr. catch basins	2 ea.	50.00	40.00	50.00
32. Reconstruct manholes	4 ea.	50.00	30.00	20.00
33. Catch basin, type D	17 ea.	25.00	40.00	44.00
34. Catch basin, type E	2 ea.	30.00	45.00	47.00
35. Catch basin, type G	1 ea.	30.00	48.75	45.00
36. 8-in. vertical wall	120 v. l. f.	10.00	10.00	10.00
37. Remove, backfill catch basins	4 ea.	25.00	2.00	10.00
38. Cement concrete masonry	28 c. y.	18.00	20.00	19.00
39. Reinforcing steel	465 lb.	.06	.10	.05
40. Remove, rebuild stone walls	2,265 l. f.	.60	.60	.50
41. Cement concrete edging	470 l. f.	.65	.60	.72
42. Precast conc. curb (std. str.)	3,470 l. f.	1.20	1.13	1.28
43. Precast conc. curb. (std. cir.)	291 l. f.	1.40	1.35	1.44
44. Precast conc. curb (std. 2-ft. c.)	40 ea.	4.50	5.00	5.00
45. Precast conc. curb ("S" str.)	205 l. f.	1.20	1.20	1.37
46. Precast conc. curb ("S" cir.)	56 l. f.	1.35	1.35	1.45
47. Granolithic walks, found	2,737 s. y.	2.30	2.25	2.00
48. Rein. cem. conc. driveways	40 c. y.	15.00	15.00	13.00
49. Riprap, hand laid	160 s. y.	1.50	1.50	1.70
50. Grouted cobble gutter	1,648 s. y.	1.75	1.25	1.60
51. Guard rail, wooden, type N	1,721 l. f.	.50	.40	.42
52. Bitum. mat'l. (RT, T-2-4)	8,793 gal.	.14	.15	.16
53. Seeding, park areas	2,017 s. y.	.05	.03	.09
54. Seeding, slope areas	13,533 s. y.	.05	.03	.09
55. Seed, park mix A	63 lb.	.40	.60	.25
56. Seed, slope mix A	420 lb.	.35	.50	.25
57. Fertilizer (8-6-4)	3,501 lb.	.05	.03	.04

HIGHWAYS, FLORIDA

OWNER: Florida State Road Department, Tallahassee; J. H. Dowling, Chief Engineer.

PROJECT: Constructing 11.73 miles of 30-ft. graded earth roadbed; approximately 7 miles of 6-in. sand bituminous road mix pavement 20-ft. wide, beginning at Wilma and proceeding north as far as funds will permit; one treated timber bridge consisting of three 15-ft. spans on treated timber pile bents with timber stringers and floor.

CONDITIONS: Time to complete, 300 working days. Contractor to furnish all materials. Wage rates on project are: skilled, 75c. per hr. minimum; semi-skilled, 45c. minimum; and unskilled, 30c. per hr. minimum.

BIDS: Ten bids were received October 3, 1939, ranging from the contract low of $164,301 to $184,749.

LOW BIDDERS:

1. Faulk & Coleman, Cocoa, Fla. (contract)..$164,301
2. Manly Constr. Co., Ocala, Fla..... 166,069
3. C. G. Fuller, Barnwell, S. Car..... 169,914

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	201.9 ac.	$135.00	$75.00	$200.00
2. Regular excavation	114,781 c. y.	.36	.35	.25
3. Lateral ditch excav	680 c. y.	.40	.50	.25
4. Sand bitum. road mix	82,143 s. y.	.23	.24	.25
5. Bitum. matl. SBRM, cut back asph.	492,858 gal.	.11	.14*	.13
6. Cl. A. conc., culvert	73.8 c. y.	30.00	30.00	20.00
7. Cl. A conc., endwalls	151.3 c. y.	32.00	30.00	20.00
8. Treated struct. timber	15.7 M.b.m.	150.00	150.00	120.00
9. Untr. struct. timber	3 M.b.m.	100.00	150.00	80.00
10. Reinforcing steel	9,137 lb.	.06	.05	.05
11. Corr. galv. met. pipe culv., 18-in.	90 l. f.	2.50	2.00	2.00
12. Corr. galv. met. pipe culv., 24-in.	106 l. f.	3.50	3.00	3.00
13. Relay 21-in. cross drain pipe	125.5 l. f.	1.15	1.00	1.00
14. Relay 24-in. cross drain pipe	220 l. f.	1.25	1.00	1.50
15. Relay 30-in. cross drain pipe	450.5 l. f.	2.00	1.50	2.00
16. Relay 15-in. side drain pipe	60 l. f.	.90	.75	1.00
17. Relay 18-in. side drain pipe	30 l. f.	1.00	.75	1.00
18. Treated timber piling	810 l. f.	1.40	1.50	1.20
19. Project markers, complete	2 ea.	15.00	10.00	10.00
20. Guard rail, Flexrlate	768 l. f.	1.40	1.50	1.10
21. Sprigging	270,500 s. y.	.03	.03	.02

* Coal tar.

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HIGHWAYS, NORTH CAROLINA

OWNER: North Carolina State Highway and Public Works Commission, Raleigh. W. V. Baise, Raleigh, State Highway Engineer.

PROJECT: Required structures on 8.31 miles of highway between Yadkin River Bridge and Lexington, N. Car.

CONDITIONS: Project to be completed in 120 working days. Highway transportation available. Labor rates: skilled, 55c. per hr.; semi-skilled, 35c. per hr.; and common labor, 25c per hr.

BIDS: Four bids were opened August 23, 1939, ranging from the contract low of $52,829 to $62,921.

LOW BIDDERS:

1. D. M. Rickenbaker, Union, S. Car. (contract) $52,829
2. Gregory & Poole, Raleigh, N. Car..... 54,618
3. Blythe Bros. Co., Charlotte, N. Car..... 59,165

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Dry excavation	320 c. y.	$1.00	$0.50	$0.75
2. Wet excavation	570 c. y.	3.00	2.00	1.50
3. Uncl. struct. excav	3,590 c. y.	.75	.35	1.20
4. Channel excavation	100 c. y.	.50	.40	2.00
5. Class A concrete	1,809 c. y.	18.00	21.00	21.00
6. Reinforcing steel	320,870 lb.	.04	.037	.04
7. Untr. timber piles	3,080 l. f.	.75	.60	.70
8. Untr. timber sheet piles	5.9 Mbm.	40.00	40.00	60.00
9. Waterproofing, method A	76 s. y.	1.50	1.00	3.00

HIGHWAYS, MAINE

OWNER: Maine State Highway Commission, Augusta, Me., L. D. Barrows, Chief Engineer; F. A. LeBlanc, resident engineer.

PROJECT: Bituminous macadam (emulsified asphalt) surfacing 2.2 miles of Monticello Highway, U. S. Route 1, from Littleton line to Meduxnekeag River. Roadway 20-ft. wide, with 3-ft. gravel shoulders. Bituminous surface 3-in., on 5- to 7-in. crushed stone base, and 18- to 24-in. gravel base.

CONDITIONS: Contractor to furnish all materials and finish work in 115 working days. Rail and highway transportation available. Minimum wages are: skilled, 80c. per hr.; semi-skilled, 50c. per hr.; and common, 40c. per hr.

BIDS: Four bids were received July 12, 1939, ranging from the contract low of $99,188 to $112,008. Contract awarded August 4.

LOW BIDDERS:

1. Wyman & Simpson, Inc., Augusta, Me..... $99,188
2. Bridge Constr. Corp., Augusta, Me..... 99,807
3. W. H. Hinman, Inc., No. Anson, Me..... 100,111

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Unclass. excavation	26,000 c. y.	$0.82	$1.00	$1.00
2. Remove trees	5 ea.	10.00	10.00	8.00
3. Excav., struct	1,040 c. y.	1.00	1.50	1.40
4. Rock excav., struct	80 c. y.	4.00	10.00	4.00
5. Common borrow	5,500 c. y.	.35	.25	.40
6. Gravel borrow	1,000 c. y.	.60	.50	.65
7. Gravel sub-base	550 c. y.	.80	.70	.75
8. Gravel base course	14,900 c. y.	.75	.70	.75
9. Stone base course	1,025 c. y.	2.00	1.50	1.75
10. Cr. stone base course	4,334 c. y.	4.00	3.75	3.90
11. Gravel surface course	650 c. y.	1.50	1.00	1.25
12. Bitum. treatment, type A	6,450 gal.	.19	.15	.16
13. Bitum. macadam surf. course	2,502 c. y.	4.00	4.00	4.00
14. Emulsified asph., applied	78,700 gal.	.14	.13	.12
15. Class A concrete	19 c. y.	23.00	20.00	20.00
16. Class B concrete	18 c. y.	20.00	20.00	20.00
17. Reinforcing steel, struct	13,270 lb.	.06	.05	.05
18. Cement rubble masonry	71 c. y.	15.00	12.00	15.00
19. 12-in. corr. met. pipe	146 l. f.	1.30	1.20	1.20
20. 18-in. corr. met. pipe	34 l. f.	1.80	1.75	1.70
21. 24-in. corr. met. pipe	70 l. f.	3.10	2.75	2.60
22. Relay corr. met. pipe	148 l. f.	.50	.25	.25
23. 12-in asph. coat. corr. met. pipe	704 l. f.	1.45	1.35	1.30
24. 15-in. asph. coat. corr. met. pipe	294 l. f.	1.80	1.65	1.60
25. 18-in. asph. coat. corr. met. pipe	292 l. f.	2.20	2.00	1.90
26. 24-in. asph. coat. corr. met. pipe	46 l. f.	3.50	3.00	3.00
27. Drop inlet, type A	1 ea.	70.00	50.00	45.00
28. Drop inlet, type B	2 ea.	100.00	50.00	50.00
29. Catch basins	13 ea.	90.00	70.00	70.00
30. Underdrain, type B	400 l. f.	1.40	1.30	1.25
31. Underdrain outlets	100 l. f.	.70	1.00	.65
32. Grouted stone gutter	2,550 s. y.	2.00	2.00	1.75
33. Wire cable guard rail	2,880 l. f.	.40	.38	.35
34. Anchorage, guard rail	18 ea.	10.00	8.00	10.00
35. Anchorages, at bridges	2 ea.	18.00	10.00	14.00
36. Loam	100 c. y.	2.00	1.00	1.00
37. Sodding	2,150 s. y.	.44	.40	.40
38. Project markers	2 ea.	10.00	10.00	10.00
39. Right-of-way monuments	6 ea.	7.00	5.00	5.00
40. Concrete curb, gutter	3,164 l. f.	1.15	1.25	1.30
41. Premixed tar gravel surf. course	1,175 s. y.	.20	.40	.20
42. Tar, premixed tar grav. surf. crse.	1,775 gal.	.30	.40	.13

HIGHWAY WORK, MONTANA

OWNER: Montana State Highway Commission, Helena; Kenneth Haskell, engineer.

PROJECT: Grading, drainage and constructing a bridge on 5.667 mi. of Section C, Terry-Brockway Road, Prairie County. The bridge is a four panel 76 ft. trestle bridge.

CONDITIONS: Transportation facilities by rail and highway are available. Stipulated contract terminal date is November 30, 1939. Minimum wages are as follows: skilled, $1.20 per hr.; semi-skilled, 82½c. per hr.; 65c. per hr.

BIDS: Four bids were received June 16, 1939, ranging from the contract low of $32,978 to $39,372.

LOW BIDDERS:

1. The Haggart Const. Co., Fargo, N. D. (contract) $32,978
2. Albert Lalande Co., Sidney, Mont..... 37,415
3. S. J. Groves & Sons Co., Minneapolis..... 38,963

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Uncl. excav	73,636 c. y.	$0.24	$2.85	$0.35
2. Struct. excav	765 c. y.	1.00	1.50	1.00
3. Overhaul	85,600 sta. yd.	.015	.03	.01
4. Hand laid rip-rap	50 c. y.	4.00	5.00	4.00
5. 15-in. corr. metal pipe culv	64 l. f.	2.00	1.50	1.50
6. 24-in. corr. metal pipe culv	648 l. f.	3.00	3.40	2.50
7. 30-in. corr. metal pipe culv	156 l. f.	4.50	3.90	3.00
8. 36-in. corr. metal pipe culv	168 l. f.	6.00	5.40	5.00
9. 42-in. corr. metal pipe culv	48 l. f.	7.00	5.90	6.00
10. 48-in. corr. metal pipe culv	564 l. f.	8.00	6.90	6.50
11. Treated lumber	27.20 M. b.m.	110.00	120.00	120.00
12. Untreated lumber	1.86 M. b.m.	100.00	120.00	120.00
13. 25 ft. treated timber piles	14 ea.	35.00	30.00	25.00
14. 30 ft. treated timber piles	15 ea.	45.00	35.00	30.00
15. Gravel ballast	21 c. y.	4.00	2.00	5.00

HIGHWAYS, OREGON

OWNER: Oregon Highway Commission, Portland, Ore. R. H. Baldock, Salem, State Highway Engineer.

PROJECT: Grading and paving 1.16 miles of Oregon Coast Highway between Marshfield and new overpass at Bunker Hill, Coos County, near Marshfield, Ore.

CONDITIONS: Rail and highway transportation facilities available. Wage rates on project are: skilled, $1.50 per hr.; semi-skilled, 75c. per hr.; common labor, 50c. per hr.

BIDS: Seven bids were opened April 6, ranging from the contract low of $108,467 to $142,781.

LOW BIDDERS:

1. Roy L. Houck, Salem, Ore. (contract)..... $108,467
2. Jacobsen-Jensen, Portland, Ore..... 110,880
3. Leonard & Slate, Multnomah, Ore..... 112,138

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	L. S.	$1,000.00	$2,000.00	$2,500.00
2. Trench excav	750 c. y.	1.00	1.00	1.40
3. Excav., single class	127,000 c. y.	.18	.21	.19
4. Overhaul	66,000 y. sta.	.01	.01	.01
5. Truck haul	57,000 y. m.	.10	.15	.10
6. Finish roadbed and slopes	L. S.	300.00	300.00	300.00
7. Rounding cutbanks	4,000 l. f.	.08	.07	.10
8. Remove old pavmt	8,000 s. y.	.30	.30	.25
9. Slope paving	700 s. y.	2.00	.70	1.00
10. 12-in sewer pipe	300 l. f.	1.00	.90	.80

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has been doing industry's "Heavy Work" since the early Eighteen Eighties. There is room on this page for only a hint at the extent of the line. Full information and price on any of our equipment will be sent immediately on request. We offer you ultra-modern material handling equipment — backed by 57 years of experience. Use our free advisory service.

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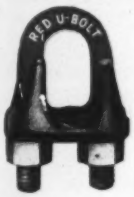
AMERICAN Wire Rope Sheaves are made in two grades of metal — special hard iron and alloy steel. They come in all sizes — from four inches in diameter to 51 inches and weighing from 4 to 585 pounds. All have deep, smoothly finished rope grooves, thick flanges and long hubs; self-lubricating bronze bushings.



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GENERAL PURPOSE

1 to 5 tons cap. Simple, light in weight, low in price, equal to all average hoisting work in construction and industry. Five Models. Gasoline, Diesel, Electric.

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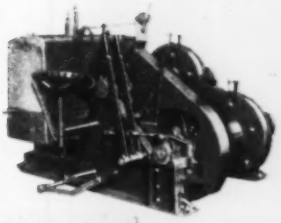
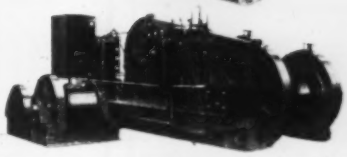
Capacities up to 25,000 pounds on a single line. Fully equal to industry's heaviest lifting requirements. 2, 3 and 4 drums; slewer if wanted. Full air control. Banked Levers. Gasoline, Diesel, Electric, Steam.





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Covers practically the entire range of construction and general material handling service. Medium price; easily erected. Boom lengths 40 to 70 feet. Capacity 4 to 10 tons.

HEAVY DUTY

For industry's heaviest lifts. Guy and Stiffleg types. Capacities up to 300 tons.

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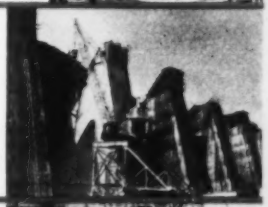
A broad-gage, full-revolving, all steel, live boom traveler. Handles all kinds of material at high speed and cheaply. Low upkeep. Can be furnished with any mounting: gantry, tower, track wheels, barge, skid. Capacities at minimum radius, from 8000 pounds at 60 feet to 100,000 pounds at 45 feet. Gasoline, Diesel, Electric, Steam.



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Fast, Rugged, Easy to Handle. Seven Models: ½ yd., ¾ yd., 1 yd., 1¼ yd., 1½ yd., 1¾ yd., 2 yds.

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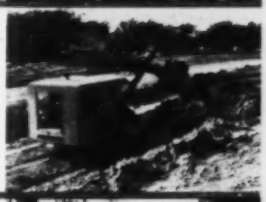

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AMERICAN TERRY DERRICK CO.
SOUTH KEARNY, N. J.

11. 18-in. sewer pipe	380 l. f.	2.00	1.80	1.50
12. Spec. sec., 12-in. S. pipe	5 ea.	4.00	2.60	3.00
13. Spec. sec., 18-in. S. pipe	5 ea.	4.00	4.30	3.00
14. 9-in. perf. corr. iron pipe	450 l. f.	.90	.80	1.00
15. 12-in. corr. iron pipe	30 l. f.	1.00	1.00	1.00
16. 24-in. corr. iron pipe	120 l. f.	2.30	2.30	2.25
17. 12-in. conc. pipe	640 l. f.	1.00	1.00	1.00
18. 18-in. conc. pipe	600 l. f.	2.25	2.20	1.75
19. Salvage culv. pipe	320 l. f.	.50	.30	1.00
20. Conc. catch basin	4 ea.	20.00	25.00	20.00
21. Conc. catch inlet	10 ea.	20.00	15.00	20.00
22. Conc. manholes	4 ea.	100.00	70.00	100.00
23. Conc. curbs and gutters	180 c. y.	20.00	15.00	20.00
24. Conc. walks	80 s. y.	1.75	1.50	1.75
25. Conc. driveway aprons	320 s. y.	2.25	2.00	2.25
26. Fog posts	50 ea.	2.00	2.50	3.00
27. 1-in. electr. conduit	950 l. f.	.20	.30	.24
28. Constr. curb recesses	L. S.	100.00	50.00	160.00
29. Conc. light pedestals	8 ea.	10.00	10.00	25.00
30. 3-in. mat'l. in sub-base	7,500 c. y.	1.85	1.90	2.10
31. 1½-in. mat'l. in base	400 c. y.	2.00	2.60	2.10
32. ¾-in. mat'l. in shoulders	800 c. y.	2.50	2.60	2.60
33. ¼-in. mat'l., cushion crse	450 c. y.	2.50	2.60	2.60
34. ¼-in. mat'l., cushion crse	200 c. y.	2.50	2.70	2.60
35. Filler	400 c. y.	.40	.30	.30
36. Hauling filler	400 y. mi.	.10	.20	.20
37. Port. cem. conc. pavmt.	18,400 s. y.	2.05	1.84	2.02
38. ½-in. exp. joints	1,900 l. f.	.20	.16	.18
39. ½-in. exp. joints	850 l. f.	.15	.14	.14
40. Contraction joints	8,600 l. f.	.03	.02	.02
41. Dowels	8,800 ea.	.14	.10	.12
42. Tie bars	9,000 lb.	.06	.03	.055
43. Min. aggregate	100 c. y.	4.00	3.50	5.00
44. Road oil (SC-6)	10 ton	46.00	40.00	40.00
45. Cl. A asph. conc	320 ton	7.00	8.00	8.00
46. Cutback asph. wearing surf	100 ton	6.00	8.00	8.00
47. Provision for traffic	L. S.	1,000.00	1,500.00	1,000.00

PENNSYLVANIA TURNPIKE

OWNER: Pennsylvania Turnpike Commission, 11 N. Fourth St., Harrisburg, Pa., S. W. Marshall, engineer.

PROJECT: Construction of 10.28 miles of Turnpike roadway, Section 19D, Contract 39, in Hopewell, Lower Mifflin, Upper Mifflin and Upper Frankford Townships, Cumberland County, Pa., consisting of grading, drainage, pavement and construction of reinforced concrete structures.

CONDITIONS: Time for completion, 260 days. Contractor to furnish all materials. Labor rates are: skilled, $1.00 to $1.50; semi-skilled, 65c. to $1.00; and common, 52½c. per hr.

BIDS: Eleven bids were received July 20, 1939, ranging from the contract low of $886,027 to $1,108,220.

LOW BIDDERS:

1. Walker Bros., Chambersburg, Pa. (contract) $886,027
2. Union Paving Co., Philadelphia, Pa. 928,840
3. Collins & Maxwell, Inc., Easton, Pa. 936,531

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	L. S.	$3,000.00	$1,000.00	$1,000.00
2. Class 1 excav	39,640 c. y.	.35	.35	.30
3. Class 2 excav	2,556 c. y.	1.50	1.70	2.00
4. Borrow excav	16,588 c. y.	.30	.35	.30
5. Shape roadway	48,555 l. f.	.15	.10	.174
6. Subgrade	288,312 s. y.	.07	.10	.10
7. Shoulders	54,055 l. f.	.15	.10	.15
8. Cem. conc. pave., 12-in. deep	22 s. y.	2.40	3.00	3.00
9. Reinf. cem. conc. pave., 9-in. deep	288,290 s. y.	2.35	2.49	2.53
10. Reinf. conc. wear. surf., br. floors	1,635 s. y.	2.25	2.00	2.00
11. Class A concrete	569 c. y.	20.00	22.00	21.00
12. Class B concrete	1,658 c. y.	17.00	17.00	17.00
13. Plain steel bars	216,516 lb.	.04	.04	.04
14. Stone backfill, misc. drain	64 c. y.	2.75	2.50	3.00
15. Stone backfill, struct	44 c. y.	2.75	2.50	3.00
16. Cement rubble masonry	18 c. y.	12.00	14.00	16.00
17. Type RS inlets	38 ea.	80.00	100.00	100.00
18. Type R inlets	8 ea.	80.00	100.00	100.00
19. Corr. metal pipe, 12-in	56 l. f.	1.75	1.50	1.25
20. Corr. metal pipe, 15-in	330 l. f.	2.00	1.80	1.75
21. Corr. metal pipe, 18-in	222 l. f.	2.50	2.00	2.25
22. Corr. metal pipe, 24-in	82 l. f.	3.00	2.60	3.00
23. Corr. metal pipe, 36-in	36 l. f.	5.50	4.50	5.50
24. Asph. coat. corr. met. pipe No. 8Ga. (F. C.), 54-in	158 l. f.	12.50	13.00	15.00
25. Reinf. cem. conc. pipe, 18-in	960 l. f.	3.00	3.00	3.00
26. Pl. cem. conc. or vit. cl. pipe, 18-in.	1,645 l. f.	2.25	2.25	2.25
27. Corr. met. pipe relaid, 12-in	16 l. f.	1.00	1.50	1.00
28. Perf. vit. cl. tile underdrain, 6-in	29,238 l. f.	.80	.75	.70
29. Perf. vit. cl. tile underdr. lat. 6-in.	10,560 l. f.	.90	.75	.70
30. Perf. vit. cl. tile fnd'n. underdr, 4-in.	1,150 l. f.	.80	.70	.60
31. Tile outlets, 4-in	352 l. f.	.70	.60	.60
32. Tile outlets, 6-in	1,512 l. f.	.75	.70	.70
33. Subgrade drains	2,750 l. f.	.40	.20	.30
34. Type P. T. F. guard fence	41,865 l. f.	.75	.75	.748
35. Type 1-C guard fence	720 l. f.	.50	.40	.40
36. Type P. T. C. intermediate take-up assemblies	23 ea.	37.50	35.00	33.00
37. Type P. T. F. end anchorages	130 ea.	22.00	22.00	16.00
38. Type C end anchorages	8 ea.	12.50	10.00	10.00
39. Top soil borrow	9,211 c. y.	.45	.60	.35
40. Approved shale borrow	13,676 c. y.	.35	.40	.25

HIGHWAY AND BRIDGES ALABAMA

OWNER: Alabama State Highway Department, Montgomery.

PROJECT: Constructing 7.142 miles of Butler-York Road, double bituminous surface treatment highway, in Choctaw County, Alabama, and reinforced concrete and steel bridges.

CONDITIONS: Contractor to furnish all materials and to finish road work in 240 working days. Bridges must be completed in 150 working days. Rail and highway transportation facilities. Wage rates are: skilled, 85c. per hr.; semi-skilled, 40c. per hr.; and common, 25c. per hr.

BIDS: Thirteen bids were received August 11, 1939 for roadwork, ranging from the contract low of $115,549 to $136,871. Eleven bids were opened at the same time for the bridge construction ranging from the contract low of $45,085 to $58,616.

ROADWAY

LOW BIDDERS:

1. Noonan Constr. Co., Pensacola, Fla. $115,549
2. Vandigriff Const. Co., Montgomery, Ala. 120,736
3. C. C. Moore, Panama City, Fla. 121,751

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub, rt.-of-way	L.S.	$3,700.00	$4,000.00	$5,150.00
2. Clear and grub, beyond rt.-of-way	7 ac.	60.00	25.00	50.00
3. Remove structures	L.S.	280.00	390.00	430.00
4. New material, etc.	L.S.	47.00	170.00	50.00
5. Reset fence	50,000 l. f.	.02	.02	.03
6. Common excavation	207,000 c. y.	.17	.195	.16
7. Uncl. culv. excav	575 c. y.	1.00	.75	1.00
8. Overhaul on excav	90,000 y. sta.	.01	.005	.01
9. Grassing	204,000 s. y.	.02	.02	.02
10. Top soil or sand clay base crse.	37,000 c. y.	.35	.34	.37
11. ½ mi. haul on base	240,500 c. y.	.02	.025	.02
12. Roadbed topping mat'l	28,350 c. y.	.21	.225	.37
13. ½ mi. haul on topping	4,500 c. y.	.05	.03	.02
14. Single surf. asph. trtmt	83,500 s. y.	.13	.12	.11
15. Plant mix seal	83,500 s. y.	.116	.10	.13
16. Conc. culv. A, new	382 5 c. y.	19.00	20.00	22.00
17. Headwall conc. B	51 17 c. y.	22.00	22.00	30.00
18. Deformed reinf. bar	59,196 lb.	.038	.04	.04
19. 18-in. corr. met. pipe	393 l. f.	1.20	1.25*	1.25
20. 24-in. corr. met. pipe	60 l. f.	2.00	2.00*	1.75
21. 30-in. corr. met. pipe	21 l. f.	2.40	3.00*	3.75
22. 18-in. conc. pipe	1,344 l. f.	1.40	1.50	1.50
23. 24-in. conc. pipe	381 l. f.	2.40	2.50	2.00
24. 30-in. conc. pipe	72 l. f.	3.30	3.50	4.00
25. 18-in. conc. pipe, ext. str	327 l. f.	1.80	1.60	1.75
26. 24-in. conc. pipe, ext. str	249 l. f.	3.00	2.60	3.25
27. 6-in. title or corr. met. drain	1,000 l. f.	.70	.75	.50
28. Bermuda ditch checks	7,100 s. y.	.32	.40	.30
29. Wire rope	19,305 l. f.	.08	.085	.08
30. Tr. timber piles	447 ea.	5.00	4.50	5.00†
31. Anchors	40 ea.	10.00	10.00	10.00
32. Pit moves	3 ea.	90.00	15.00	25.00
33. Right-of-way markers	126 ea.	2.00	2.00	2.00
34. Top soil	2,000 c. y.	.30	.50	.40
35. Gutter board	5 M.b.m.	40.00	60.00	70.00
36. Stripping excav.	7,500 c. y.	.10	.10	.10

* Concrete pipe "B." † Concrete posts.

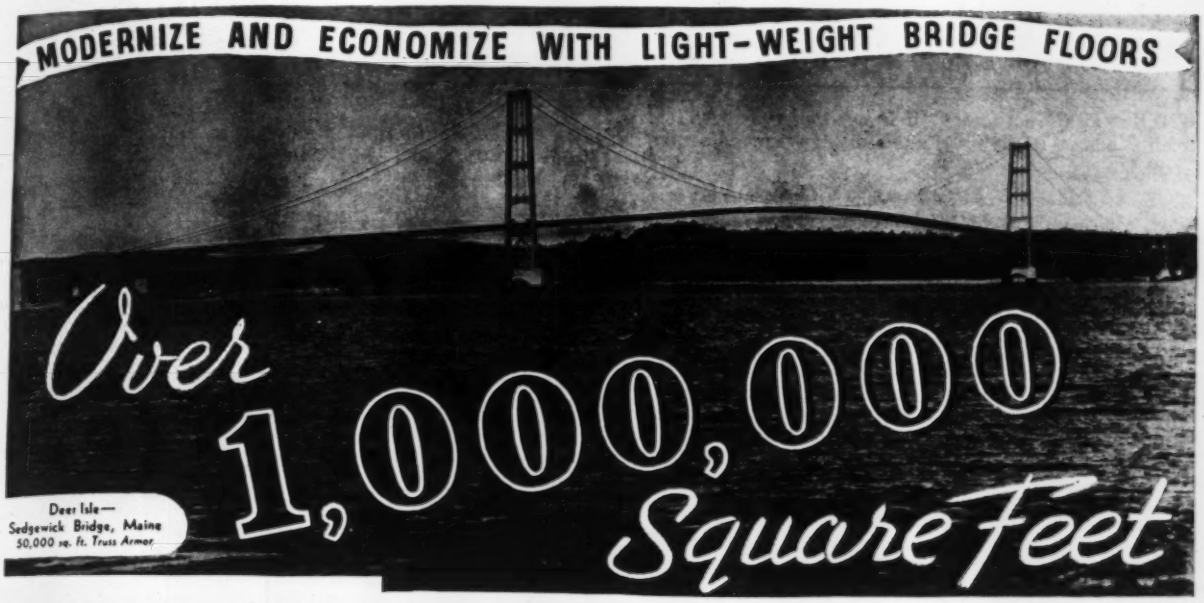
BRIDGES

LOW BIDDERS:

1. Noonan Constr. Co., Pensacola, Fla. $45,085
2. Sanders & Perkins, Hinesville, Ga. 48,498
3. Goodwin & Murphree, Troy, Ala. 48,716

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cl. A conc., bridge	770 c. y.	$21.25	$25.00	$23.00
2. Deformed reinf. bars	134,500 lb.	.038	.04	.04
3. Structural steel	250,000 lb.	.05	.046	.05
4. Cl. 1 excav., bridge	400 c. y.	1.00	.200	1.50
5. Cl. 2 excav., bridge	100 c. y.	6.00	10.00	5.00
6. Pile splices	30 ea.	8.00	8.00	8.00
7. Furn. steel piles	5,016 l. f.	1.15	1.20	.80
8. Drive steel piles	5,016 l. f.	.48	.53	.80
9. Furn. untr. timber piles	1,100 l. f.	.20	.40	.30
10. Steel test piles	4 ea.	100.00	150.00	150.00
11. Drive untr. timber piles	1,100 l. f.	.25	.10	.30
12. Remove old bridge	L.S.	300.00	400.00	750.00
13. Temp. br. and detour	L.S.	500.00	100.00	1,750.00

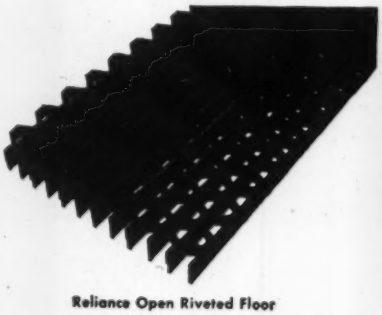
MODERNIZE AND ECONOMIZE WITH LIGHT-WEIGHT BRIDGE FLOORS



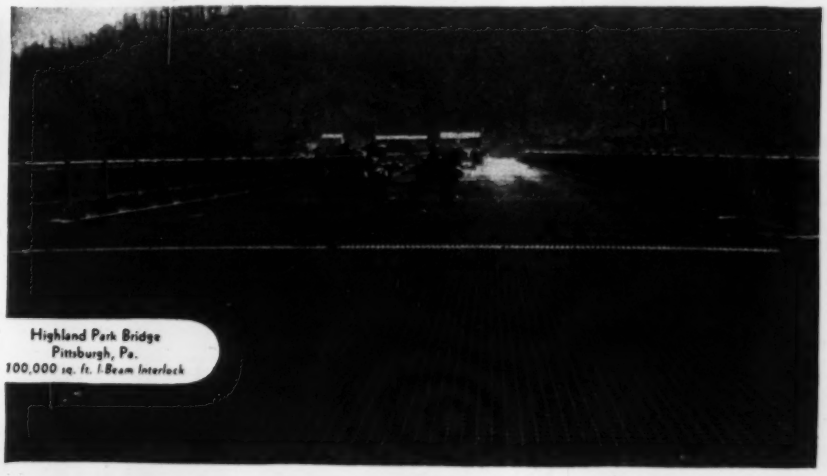
RELIANCE *Light-weight* BRIDGE FLOORS

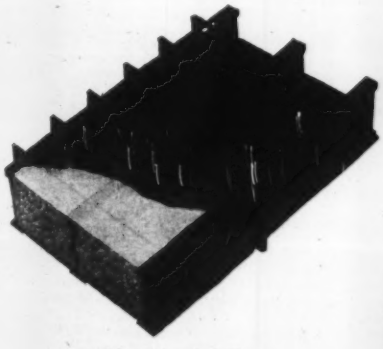
For years ***Reliance*** engineers have pioneered the development of all types of concrete-filled and open-grid light-weight bridge floors. Due to their many years of research and experience, they have incorporated into such floors features which have stood the tests of the most severe traffic and wear-resisting conditions.

Manufacturing, as they do, all types of light-weight bridge floors, ***Reliance*** is in position to recommend, without bias or prejudice, the type best suited to your particular needs!



Reliance Open Riveted Floor





I-Beam Interlock Floor

PRODUCTS: I-BEAM INTERLOCK · I-BEAM WELD · TRUSS-ARMOR · T-WELD RIVETED AND WELDED OPEN-GRID · 5-INCH OPEN RIVET GRID FLOORS · ELECTRO-PRESSURE WELDED GRATINGS AND TREADS

RELIANCE STEEL PRODUCTS *Company*
OFFICES AND PLANT • McKEESPORT, PENNA.

HIGHWAY BRIDGES CALIFORNIA

OWNER: California State Highway Department, C. H. Purcell, State Highway Engineer, Los Angeles and Sacramento.

PROJECT: Construction of 4 highway bridges, Los Angeles County, Arroyo Seco Parkway, Avenue 52 and Herman Avenue. Two bridges over Arroyo Seco Parkway, and two over Arroyo Seco Channel. Paving and grading of approaches included in project.

CONDITIONS: It is necessary for contractor to take precautions to protect WPA channel improvement job now in progress in vicinity. All materials to be furnished by contractor. Labor rates: skilled, $1.375 per hr.; semi-skilled, $1.00; and common, 62½c per hr. Stipulated contract time, 275 working days.

BIDS: Twelve bids were received June 15, 1939, ranging from the low of $191,601 to $230,754.

LOW BIDDERS:

1. J. E. Haddock, Ltd., Pasadena, Calif. (contract) $191,601
2. United Concrete Pipe Corp., Los Angeles, Calif. 199,342
3. Mittry Bros. Constr. Co., Los Angeles, Calif.. 200,328

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remov. conc.	1,210 c. y.	$3.90	$4.00	$2.50
2. Clear and grub	L. S.	300.00	2,000.00	250.00
3. Watering	1,300 M gal.	.90	.70	1.00
4. Rdwy. excav.	31,000 c. y.	.206	.27	.22
5. Struct. excav.	3,280 c. y.	.65	.60	1.00
6. Struct. backfill	5,150 c. y.	.60	.40	.60
7. Overhaul	96,000 sta. y.	.01	.005	.01
8. Import top soil	2,900 c. y.	.50	.75	.80
9. Prepare subgrade	31,000 s. y.	.10	.12	.10
10. Finish roadway	L. S.	600.00	750.00	1,000.00
11. Liq. asphalt, SC-2, prime	11 ton	10.00	8.00	10.00
12. Aggr. plant mix surf.	1,900 ton	1.70	1.90	2.00
13. Liq. asphalt 90-95 mix. surf	100 ton	7.25	7.00	7.00
14. Asph. emulsion (seal)	5 ton	20.00	20.00	20.00
15. Asph. conc.	3,800 ton	2.00	2.25	2.25
16. Cl. B. Port. cmt. conc., pave	4,010 c. y.	5.00	5.60	6.50
17. Pavement dowels	7,200 ea.	.11	.10	.12
18. Reinf.	734,000 lb.	.035	.034	.038
19. Mesh reinf.	850 s. y.	.25	.25	.30
20. Cl. A. Port. cmt. conc., struct.	4,342 c. y.	16.50	16.30	14.50
21. Adj. manholes to grade	15 ea.	10.00	10.00	15.00
22. Class A Port. cmt. conc. (curb, gutter, sidewalk)	1,815 c. y.	9.50	10.00	11.50
23. Curb armor	550 l. f.	1.00	1.00	1.25
24. Lamin. guard rail	3,770 l. f.	.90	1.00	1.00
25. Pipe handrail	300 l. f.	2.15	1.89	2.00
26. Steel railing	728 l. f.	6.15	6.40	7.70
27. Copper strips	2,700 lb.	.35	.30	.375
28. 1½-in. sprinkl. sys. galv. steel pipe	1,100 l. f.	.33	.30	.25
29. 2-in. sprinkl. sys. galv. steel pipe	3,100 l. f.	.36	.36	.40
30. Reconst. manholes, type A	4 ea.	90.00	100.00	100.00
31. Electr. equipment	L. S.	7,300.00	7,406.00	7,900.00
32. Misc. items of work	L. S.	1,000.00	2,000.00	1,300.00

HIGHWAY BRIDGE VERMONT

OWNER: Vermont State Highway Department, Montpelier, Vt., H. E. Sargent, chief engineer, A. D. Bishop, bridge engineer.

PROJECT: Constructing 3-span steel I-beam bridge with concrete deck, 252 ft. overall length, on Park Street over Roaring Branch, Bennington, Vt. Spans 84 ft. each. Clearance 16 ft. Roadway 24 ft., and sidewalk 5 ft. wide.

CONDITIONS: Must be completed in 200 consecutive calendar days. Contractor to furnish all materials, and pay the following wage rates: skilled, 60 to 93 1/3c. per hr.; semi-skilled, 55 to 60c. per hr.; and common, 40c. per hr.

BIDS: Eight bids were received on March 17, ranging from the contract low of $39,528 to the high of $51,869.

LOW BIDDERS:

1. Bennington Constr. Co., Bennington, Vt. (contract) $39,528
2. Carlo Bianchi Co., Inc., Framingham, Mass... 40,295
3. M. J. Burrington, Jr., Bennington, Vt..... 41,607

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excav., inc. borrow	100 c. y.	$0.50	$0.50	$0.50
2. Trench excav., earth	25 c. y.	1.00	2.00	1.00
3. Trench excav., rock	10 c. y.	4.00	4.00	3.00
4. Channel excav	5,400 c. y.	.50	.60	.40
5. Struct. excav.	654 c. y.	2.00	4.00	3.00
6. Maintain traffic	L. S.	150.00	200.00	50.00
7. Sub-base, gravel	1,000 c. y.	.60	.60	.50
8. Grav. surf. course	360 c. y.	1.00	.75	1.00
9. Double tack coat, ref. tar	560 gal.	.20	.15	.20
10. Conc. Cl. A	291 c. y.	20.00	20.00	20.00
11. Conc. Cl. B	197 c. y.	18.00	15.00	20.00
12. Reinf.	65,270 lb.	.04	.045	.04
13. Steel superstr.	L. S.	15,800.00	15,500.00	18,000.00
14. 30 in. corr. galv. metal pipe	72 l. f.	3.50	5.00	4.50
15. Remove superstructure	L. S.	200.00	500.00	200.00
16. Hvy. stone fill (Mod.)	780 c. y.	3.75	3.00	3.50
17. Cable guard rail	248 l. f.	.50	.50	.50
18. Anchors, guard rail	6 ea.	10.00	10.00	10.00
19. Balustrade rail	502 l. f.	5.00	4.50	4.50
20. Conduit, light. sys.	L. S.	200.00	200.00	200.00
21. Cut and remove trees	9 ea.	15.00	10.00	10.00

HIGHWAYS AND BRIDGES MISSOURI

OWNER: Missouri State Highway Commission, Jefferson City, Mo., C. W. Brown, Chief Engineer.

PROJECT: Grading, constructing culverts, bridging, and concrete pavement for 3.861 miles of 20-ft.-wide surfaced road in Vernon County, Missouri.

CONDITIONS: Contractor to furnish all materials and complete work in 210 working days. Rail and highway transportation facilities available. Wage rates are: skilled, 60c. per hr.; semi-skilled, 40c.; and common, 30c. per hr.

BIDS: Nine bids were received August 11, 1939, ranging from the contract low of $145,045 to $205,323.

LOW BIDDERS:

1. Koss Constr. Co., Des Moines, Ia. (contract) .$145,045
2. Harrison Engr. & Constr. Co., Kansas City, Mo. 152,326
3. Imperial Constr. Co., Leavenworth, Kan..... 154,174

ROADWORK

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remove hedges	4.6 hund. f.	$10.00	$10.00	$7.00
2. Unclass. excavation	107,483 c. y.	.22	.23	.16
3. Cl 3 excav. structures	779 c. y.	1.50	1.20	1.20
4. Compact. embank. (rolling)	84,444 c. y.	.03	.025	.04
5. Overhaul	46,649 sta. y.	.02	.01	.02
6. Broken stone	4,763 c. y.	2.65	2.60	2.50
7. Screenings	2,136 ton	1.70	1.70	2.00
8. Water	15,200 hund. gal.	.01	.02	.....
9. Chat or cr. stone surf	337 c. y.	2.00	2.50	2.00
10. P.C.C. pavmt., non-reinf	45,240.5 s. y.	1.65	1.83	2.00
11. Cl. B conc., box culv	287.2 c. y.	24.00	22.00	22.50
12. Spec. conc. protect. in gr. C	56.1 c. y.	.01	.....	.01
13. 15-in. corr. met. culv. pipe	8 l. f.	1.40	1.25	1.50
14. 18-in. corr. met. culv. pipe	72 l. f.	1.60	1.50	1.75
15. 30-in. corr. met. culv. pipe	32 l. f.	2.50	3.00	3.00
16. 15-in. culvert pipe	444 l. f.	1.60	1.25	1.50
17. 18-in. culvert pipe	136 l. f.	1.80	1.50	1.75
18. 24-in culvert pipe	36 l. f.	2.00	2.00	2.50
19. Relaid pipe culverts	234 l. f.	1.00	1.00	1.00
20. Reinforcing steel	31,120 lb.	.045	.05	.045
21. Grout light stone revetment	10 s. y.	5.00	3.00	3.00
22. 12-in. cobblestone gutter	85 l. f.	1.50	1.50	2.00
23. Barricades	7 ea.	35.00	35.00	40.00
24 Relocating barricades	3 ea.	15.00	20.00	15.00
25. Subdrains	720 l. f.	1.00	1.00	.75

BRIDGE — STATION 563+21.58

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cl. 1 excav., structures	60 c. y.	$1.20	$1.20	$1.20
2. Cl. B conc., handrail	14.9 c. y.	45.00	45.00	45.00
3. Cl. B conc., superstr., except handrail	58.7 c. y.	23.50	22.50	22.50
4. Cl. B conc., substr., except handrail	69.2 c. y.	29.00	28.00	30.00
5. Spec. conc. protect. in gr. A	14.9 c. y.	.01	.....	.....
6. Spec. conc. protect. in gr. B	58.7 c. y.	.01	.....	.....

7. Spec. conc. protect. in gr. C	69.2 c. y.	.01	.....	.....
8. Fabr. struct. steel	50,200 lb.	.062	.062	.062
9. Steel castings	2,680 lb.	.20	.20	.20
10. Reinforcing steel	15,860 lb.	.042	.042	.042
11. Temporary bridges	70 l. f.	6.00	6.00	6.00
12. Removing exist. struct. (superstr. only)	L.S.	500.00	500.00	500.00
13. Special work	L.S.	240.00	240.00	240.00

BRIDGE — STATION 666+19.69

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cl 1 excav., struct	320 c. y.	$1.20	$1.20	$1.20
2. Class B concrete	153.5 c. y.	22.50	21.50	22.00
3. Spec. conc. protect. in gr. C	153.5 c. y.	.01	.....	.....
4. Reinforcing steel	11,420 lb.	.042	.042	.042
5. Special work	L.S.	120.00	120.00	120.00

GRADE ELIMINATION, LOUISVILLE, KY.

OWNER: City of Louisville, Ky., and Pennsylvania Railroad. James B. Wilson, Chief Engineer, City of Louisville.

PROJECT: Elevating railroad tracks on 14th Street from Ohio River south to Maple Street, thence east to 10th Street Union Station overpass, including 11 underpasses with clear spans over major east and west streets separating business district from west end residential district.

CONDITIONS: City to pay 35 per cent of cost, railroad 65 per cent. Contractor to furnish all materials, and finish job by December 31, 1940. Rail and highway transportation facilities available. Wage rates: skilled $1.10 per hr.; semi-skilled, 60 to 90c. per hr.; and common, 45c. per hr.

BIDS: Five bids were received Sept. 18, 1939, ranging from the contract low of $1,206,592 to $1,382,593.

LOW BIDDERS:

1. Henry Bickel Co., Louisville, Ky. (contract) $1,206,592
2. Ruby Lumber Co., Madisonville, Ky..... 1,224,996
3. John F. Casey Co., Pittsburgh, Pa..... 1,327,676

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Unclassified excavation	55,077 c. y.	$0.90	$1.20	$1.37
2. Earth borrow, embankment	142,500 c. y.	.88	.75	1.05
3. 6-in. pl. conc. base crse	47,025 s. y.	1.50	1.50	1.50
4. 7-in. reinf. conc. driveways, Cl. A	15,500 s. y.	2.55	2.25	2.60
5. 6-in. pl. conc. cement alleys	3,380 s. f.	2.00	1.85	2.10
6. 1½-in. sh. asph. binder, 1½-in. surf. crse	46,831 s. y.	1.35	1.35	1.35
7. Comb. curb and gutter, type C	19,906 l. f.	1.10	1.00	1.15
8. Reset old curbs	100 l. f.	.50	.75	.50
9. 12-in. catch bas. leads, vitr. pipe	2,409 l. f.	5.00	2.40	5.30
10. 12-in. catch bas. leads— e.i	54 l. f.	8.00	6.10	8.40
11. 12-in. dia. sewer, vitr. pipe	1,911 l. f.	3.00	2.45	4.20
12. 15-in. dia. sewer, vitr. pipe	1,130 l. f.	3.50	2.85	4.70
13. 18-in. dia. sewer, vitr. pipe	935 l. f.	4.00	3.50	5.25
14. 18-in. dia. sewer, cast iron	180 l. f.	10.00	8.60	10.00
15. C.B. vert. curb type circ., sgl. fr	104 ea.	75.00	60.00	80.00
16. C.B. vert. curb type circ', dbl. fr	24 ea.	85.00	94.00	100.00
17. Manhole with steps, fr. and cov	259 ver. f.	13.50	9.75	10.00
18. Same, reconstruct	15 ea.	69.00	75.00	50.00
19. Reset M.H. or C.B. frames, old fr. and cov	21 ea.	5.00	6.00	5.00
20. Reset M.H. or C.B. fr., new fr. and cov	21 ea.	20.00	25.00	20.00
21. Concrete header	115 l. f.	.35	.75	.40
22. Fire hydrant, connections	11 ea.	300.00	295.00	300.00
23. Binder in place	565 tons	8.00	6.50	8.00
24. Sheet asphalt, in place	565 ton	10.00	8.25	10.00
25. Grouted ballast, in place	580 c. y.	10.00	12.50	8.00
26. 4½-in. sidewalk, Cl. B conc	23,567 s. y.	1.60	1.50	1.65
27. 6-in. priv. driveways, Cl. B conc	2,441 s. y.	2.00	1.85	2.10
28. Priv stairways, Cl. B conc	300 c. y.	20.00	16.00	23.00
29. Cl. A concrete underpinning	80 c. y.	23.88	16.00	20.00
30. Cl. A pl. conc. st. retain. wall	900 c. y.	15.40	12.00	20.00
31. Inlet, freight yd. driveways	44 ea.	25.00	27.00	42.00
32. 21-in. sewer, vitr. pipe	415 l. f.	4.58	6.85	5.00
33. Track work	L.S.	175,000.00	175,000.00	175,000.00
34. Cl. A conc., superstructure	3,250 c. y.	16.00	17.00	14.00
35. Class B concrete	7,115 c. y.	12.00	14.00	14.00
36. Reinforcing steel	941,940 lb	.04	.04	.054
37. Struct. steel, incl. painting	3,109,660 lb.	.0557	.06	.052
38. Membrane waterproofing	27,870 s. f.	.40	.47	.35
39. Damp-proofing	90,000 s. f.	.05	.06	.04
40. Pipe handrail, retain. wall	2,265 l. f.	1.75	1.80	1.60
41. Spec. handrail, bridges	266 l. f.	5.20	5.50	5.00
42. Porous material	9,630 c. y.	1.45	2.25	1.30
43. 8-in. corr. met. dr. pipe	5,125 l. f.	1.00	.90	1.00
44. 12-in. vitr. cl. dr. pipe	1,855 l. f.	2.00	.85	2.25
45. Remove abandoned property	L.S.	2,463.00	320.00	1.00
46. Moving crane	L.S.	700.00	1,800.00	1,000.00
47. Move L.&N.B.&B. Bldg	L.S.	1,817.00	1,800.00	1,300.00
48. Move L.&N. section house	L.S.	100.00	250.00	225.00
49. Move L.&N. water tank and Yd. office	L.S.	1,325.00	2,150.00	1,350.00
50. Move PRR 11th St. crossing gates	L.S.	400.00	600.00	350.00
51. 2½-in. stone ballast at 12th St.	1,000 c. y.	4.17	3.00	3.00
52. C. I pipe through abutments	60 l. f.	2.00	2.75	2.25
53. Cl. A conc., substr. and ret. walls	6,940 c. y.	17.00	18.00	25.00
54. 3½-in. fiber conduit, bridges	3,076 l. f.	.20	.25	.25
55. Manhole rings and covers, bridges	20 ea.	13.40	22.50	25.00

UNDERPASS, NORTH DAKOTA

OWNER: North Dakota State Highway Department, J. S. Lamb, commissioner; C. Johnson, engineer.

PROJECT: Construction of 55-ft. steel I-beam and concrete deck span underpass grade separation and approaches under Northern Pacific Railway tracks at 9th and Main Streets, Bismarck, N. Dak.

CONDITIONS: All materials to be furnished by contractor. Stipulated contract time 175 sixteen-hour days. Wage rates are: skilled 80c. per hr.; semi-skilled, 60c. per hr.; and common, 45c. per hr. There is, however, possibility of higher labor costs. Contract was awarded conditionally contingent upon rate change, and upon state election July 11.

BIDS: Eight bids were opened June 1, and letting was made June 30, 1939. Bids range from the low of $149,268 to $179,920. Engineer's estimate, $175,206.

LOW BIDDERS:

1. Minneapolis Bridge Co., Minneapolis, Minn. (conditional award) $149,268
2. Fielding & Shepley, St. Paul, Minn..... 152,469
3. Rue Constr. Co., Bismarck, N. Dak..... 155,301

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Unclass. excav	12,458 c. y	$0.33	$0.40	$0.40
2. Struct. excav., paving	40 c. y.	.86	1.50	1.30
3. Class A-4 concrete	81.2 c. y.	19.10	24.00	24.00
4. Reinforcing steel	3,893 lb.	.05	.06	.06
5. 7-in. one crse. conc. pave.	6,051.6 s. y.	3.50	2.80	2.30
6. 6-in. integr. curb (curved)	211.4 l. f.	.39	.40	.45
7. 6-in. integr. curb (straight)	579 l. f.	.33	.40	.40
8. 12-in. integr. curb. (strght)	241.8 l. f.	.60	1.00	.80
9. Variable integral curb	280.5 l. f.	.87	1.50	.90
10. Rein. conc. sidewalk	764.9 s. y.	2.70	1.25	2.50
11. Concrete sidewalk	407.4 s. y.	2.56	1.00	2.00
12. 3-bar pipe railing	308.7 l. f.	3.51	2.50	3.00
13. Curb inlets, type A	2 ea.	58.75	40.00	35.00
14. Curb inlets, type B	4 ea.	18.80	50.00	60.00
15. Drop inlets	2 ea.	28.50	60.00	40.00
16. Manholes, under 12-ft	4 ea.	133.70	100.00	150.00
17. Manholes, over 18-ft	2 ea.	200.55	150.00	230.00
18. 8-in. vit. cl. pipe (open jt.)	972 l. f.	1.62	1.25	1.60
19. 8-in. vit. cl. pipe (cem. jt.)	280 l. f.	1.25	1.25	1.30
20. 12-in. rein. conc. pipe (cem. jt.)	276 l. f.	1.82	2.00	3.20
21. 15-in. rein. conc. pipe (cem. jt.)	1,367 l. f.	2.18	9.00	10.00
22. 8-in. c. i. soil pipe	60 l. f.	2.48	2.00	2.00
23. Adj. manholes to grade	4 ea.	43.30	15.00	15.00
24. Adj. catch basins to grade	2 ea.	43.23	10.00	15.00
25. Adj. water valve to grade	6 ea.	33.60	60.00	10.00
26. Adj. fire hydrant	1 ea.	48.30	60.00	40.00
27. Reloc., lower 8-in. wat. main	412 l. f.	1.05	2.25	3.50
28. Remove exist. pavmt	5,378.6 s. y.	.19	.40	.40
29. Sodding	93 s. y.	.50	1.00	1.00
30. 3-ply membr. waterprfg	12 l. f.	.44	.60	.32
31. Backfill	2,597 c. y.	.48	.50	.50
32. Structural excav	1,505 c. y.	1.48	2.00	2.00
33. Untr. piling, temp. br	3,298 l. f.	.70	.70	.80
34. Untr. timber, temp. br	51.8 M. bm	63.65	75.00	90.00
35. Tr. timber test piles	6 ea.	81.00	150.00	130.00
36. Tr. timber piles	9,686 l. f.	1.07	1.10	1.10
37. Class B concrete	846 c. y.	12.10	13.00	18.00
38. Class A-1 concrete	418 c. y.	21.35	20.25	20.00
39. Class A-2 concrete	715 c. y.	24.58	17.25	20.00
40. Class A-3 concrete	46 c. y.	40.00	35.00	28.00
41. Reinforcing steel	171,266 lb.	.06	.06	.055
42. Structural steel	242,701 lb.	.05	.065	.05
43. Pipe railing, bet. cols	48.4 l. f.	1.43	1.50	1.50
44. Ornamental railing	113.3 l. f.	5.13	5.00	7.00
45. 3-bar pipe railing	651.2 l. f.	3.51	3.50	3.20
46. 2-bar pipe railing	451 l. f.	2.30	2.50	2.75
47. Asph. waterprfg. 1 coat	5,945 s. f.	.05	.05	.03
48. Asph. waterprfg. 2 coats	2,051 s. f.	.14	.07	.04
49. Asphalt planks	3,393 s. f.	.28	.30	.25
50. 2-ply membr. waterprfg	3,393 s. f.	.26	.15	.10
51. 3-ply membr. waterprfg	708 l. f.	.40	.60	.32
52. Lighting system	L. S.	2,125.50	2,000.00	1,000.00
53. High early str. conc	193 c. y.	14.60	20.00	18.00
54. Rehandling materials	6,000 c. y.	.29	.15	.20
55. Gravel fill material	15,000 c. y.	.56	.40	.50
56. Pit run grav. ballast	4,000 c. y.	1.04	.70	.85
57. Washed gravel ballast	1,500 c. y.	1.10	1.50	1.00

POTOMAC RIVER BRIDGE

OWNER: Maryland State Roads Commission.

PROJECT: Construction of a bridge across the Potomac River between Ludlow Ferry, Va. and Charles County, Md. This contract (No. 2) includes the west abutment, approach trestle bents Nos. 1 to 59 and piers Nos. 1 to 20. Total length of approach fills and bridge for the completed project is 11,369 ft. Bridge proper is 10,050 ft. Longest span is 800 ft. and the pile trestle at the west end is 3,628 ft. long. Highest point on the roadway is to be 150 ft. above water. Stipulated contract time is 310 calendar days and transportation by rail, highway and water is available. Due to the condition of the river bottom, some steel piles will be driven 150 ft. to rock.

BIDS: Three bids were received Feb. 14, 1939, ranging from the contract low of $2,089,323 to $2,394,012. Wage rates are as follows: skilled $1.75 per hr.; semi-skilled, 90c. per hr.; common, 70c. per hr.

LOW BIDDERS:

1. Merritt, Chapman & Scott, New York (contract) $2,089,323
2. Arundel Corp., Baltimore..... 2,272,372
3. Spencer & Ross, Detroit..... 2,394,012

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Dredging for piers 1 to 20	158,000 c. y.	$.55	$1.12	$1.00
2. Class 2 excav. west abut	70 c. y.	3.60	4.00	2.00
3. Class 3 excav west abut	20 c. y.	10.00	4.00	10.00
4. Wash borings, ord. dry samples	1,600 l. f.	3.00	4.50	4.00
5. Wash borings, undist. samples	1,600 l. f.	6.00	5.00	5.00
6. Undisturbed samples	125 ea.	9.00	3.00	10.00
7. Core borings	80 l. f.	4.50	6.00	10.00
8. Steel H piles 14x14½-in., 73 lb.*	1,500 l. f.	4.80	4.50	6.10
9. Steel H piles 14x14½-in., 89 lb.	1,600 l. f.	5.35	5.20	6.70
10. Steel H piles 14x16-in., 102 lb.	2,300 l. f.	6.10	6.00	7.40
11. Steel H piles 14x16-in., 117 lb.	1,600 l. f.	7.05	6.50	8.10
12. Steel H piles 14x14½-in., 127 lb.	825 l. f.	7.60	7.00	8.90
13. Steel H piles 14x14½-in., 136 lb.	840 l. f.	8.00	7.30	9.40
14. Steel H piles 14x16-in., 142 lb.	875 l. f.	8.20	7.60	9.80
15. Steel H piles 14x16-in., 158 lb.	900 l. f.	9.15	8.10	10.40
16. Steel H piles 14x16-in., 176 lb.	920 l. f.	10.00	9.00	11.50
17. Steel H piles 14x16-in., 102 lb.*	120,750 l. f.	5.38	7.00	6.40
18. Steel H piles 14x14½-in., 127 lb.	15,300 l. f.	6.68	7.60	7.50
19. Class A untr. wood piles	1,500 l. f.	.65	.90	1.40
20. Concrete test piles, ready for driving	800 l. f.	9.00	9.50	8.00
21. Driving conc. test piles	750 l. f.	3.70	3.00	5.60
22. Steel test piles, ready for driving	140,000 lb.	.045	.045	.044
23. Driving steel test piles	1,575 l. f.	2.20	2.00	3.50
24. Loading test piles	6 ea.	1,000.00	1,500.00	900.00
25. Platforms for survey sta	10 ea.	760.00	1,500.00	400.00
26. Tremie concrete	21,500 c. y.	31.15	22.80	30.40
27. Class A conc., Piers 1 to 20	6,900 c. y.	12.60	20.00	20.00
28. Class A conc., west abut	100 c. y.	22.00	25.00	26.00
29. Class A conc., trestle clamps	570 c. y.	23.50	35.00	34.00
30. Class A conc., trestle caps	630 c. y.	21.40	30.00	35.00
31. Reinf. steel, Piers 1 to 20	1,800,000 lb.	.063	.05	.06
32. Reinf. steel, west abut	6,100 lb.	.06	.05	.06
33. Reinf. st., trestle caps & clamps	95,000 lb.	.07	.05	.06
34. Steel prot. plates, Piers 1 to 20.	16,000 s. f.	2.30	5.00	1.80
35. Struct. steel and anchor bolts.	8,300 lb.	.35	.20	.15
36 Protec. coating for conc., west abut	L.S.	44.00	250.00	200.00
37. Facilities for engineers	L.S.	12,238.00	12,000.00	27,000.00

*Note — Items 8 to 16 are trestle bent piles; items 17 and 18 are pier piles.

BRIDGE, COLORADO

OWNER: Colorado State Highway Department, Denver. Charles D. Vail, State Highway Engineer.

PROJECT: Construction of steel I-Beam bridge with concrete deck across Arickaree River, in Yuma County, south of Wray, Colo., on State Highway No. 51. Consists of 20 spans identical in construction, each 39-ft. long; 25-ft. clear roadway.

CONDITIONS: Quicksand condition exists at bridge site, will require care in handling construction equipment. Materials to be furnished by contractor and project to be finished in 270 consecutive calendar days. Railroad facilities available to Wray, and highway transportation from Wray. Wage rates specified are: skilled, $1.10 per hr.; semi-skilled, 70c.; and common labor, 50c. per hr.

BIDS: Eleven bids opened September 14, 1939, ranging from the contract low of $78,935 to $88,331. Engineer's estimate, $101,805.

LOW BIDDERS:

1. Lawrence Constr. Co., Denver, Colo. (contract) $78,935
2. F. M. Kenney, Denver, Colo..... 79,279
3. DeRemer & Atchison, Littleton, Colo..... 81,250

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Dry common excav., struct	484 c. y.	$0.71	$0.75	$1.50
2. Wet common excav., struct	646 c. y.	4.22	3.00	3.00
3. Selected backfill	80 c. y.	1.56	.50	1.50
4. Untr. bridge timber	0.3 M.b.m.	100.00	80.00	150.00
5. Class A. concrete	1,206 c. y.	19.25	18.00	19.00
6. Class A conc. handrail	73 c. y.	40.00	30.00	35.00
7. Reinforcing steel	163,750 lb.	.0425	.04	.044
8. Structural steel	486,200 lb.	.043	.044	.0475
9. Struct. steel piles	9,310 l. f.	1.85	2.20	1.92
10. Treated timber piles	3,584 l. f.	1.05	1.10	1.10
11. Bronze name plate	1 ea.	25.00	25.00	30.00
12. Sheet copper	675 lb.	.50	.45	.60
13. Drain pipe, 3-in. by 3-ft. 4-in	80 ea.	4.50	4.00	5.00

HIGHWAY BRIDGES AND CULVERTS, TEXAS

OWNER: Texas State Highway Department, Austin, Tex., J. Montgomery, State Highway Engineer, Austin. Oscar A. Seward, Jr., Groesbeck, Tex., engineer.

PROJECT: Grading, drainage, structures on 5.812 miles of U. S. Highway 84, Limestone County, Tex., from 10.965 miles east of McLennan-Limestone County line to west of Mexia.

CONDITIONS: Contract awarded May 8, 1939, and must be completed in 200 working days. Railroad transportation available. All materials furnished by contractor. Stipulated wage rates are: skilled, $1.00 per hr.; semi-skilled, 50c. per hr.; and common, 40c. per hr.

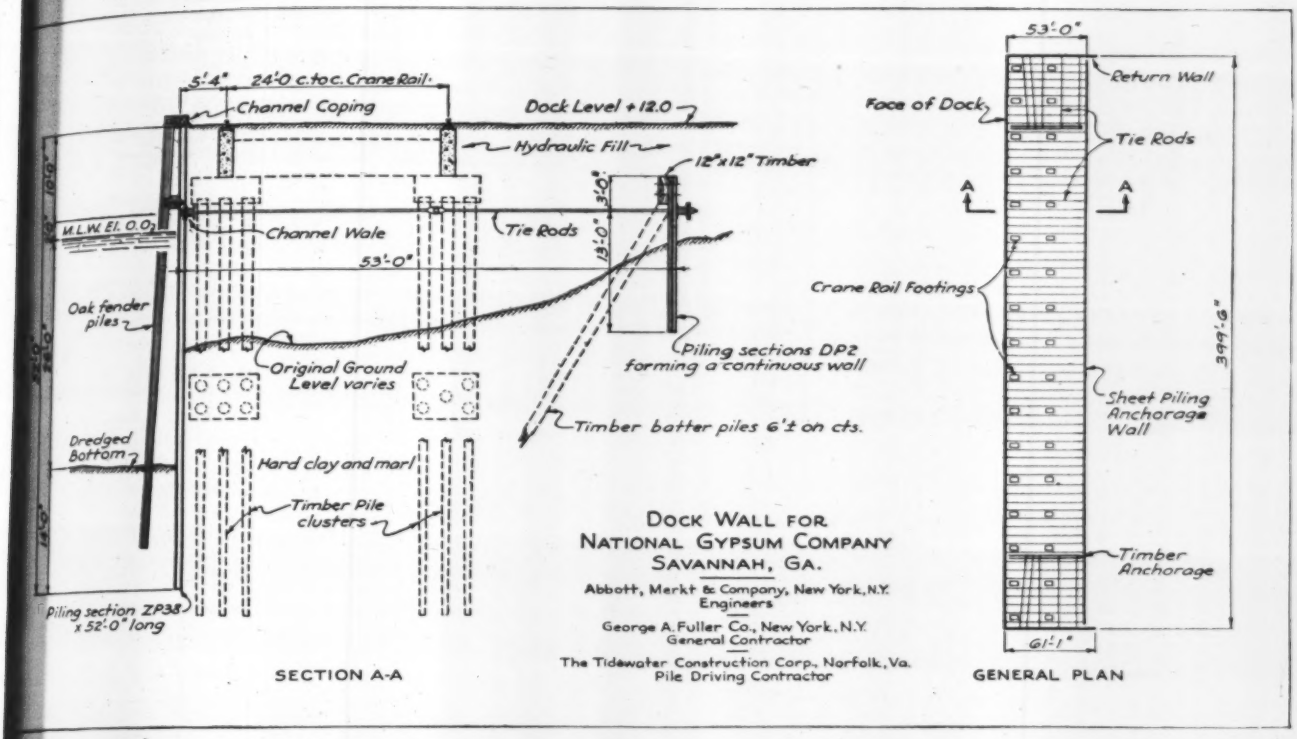
BIDS: Five bids received April 25, 1939, ranging from the contract low of $151,525 to the high of $162,303.

LOW BIDDERS:

1. Cage Bros. & F. M. Reeves & Sons, Bishop, Tex. (contract) $151,525
2. Ben Sira & Co., Dallas, Tex..... 156,962
3. W. W. Vann & Co., Kerrville, Tex..... 160,539

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	57 acre	$100.00	$149.00	$125.00
2. Com. road excav	59,927 c. y.	.15	.16	.18
3. Rock road excav	8,210 c. y.	1.00	.75	.80
4. Com. borrow	32,012 c. y.	.15	.15	.17
5. Com. channel excav	138,857 c. y.	.20	.18	.17
6. Unc. struct. excav., culv	456 c. y.	1.50	1.00	1.50
7. Unc. struct. excav., brdg.	600 c. y.	1.50	1.25	1.50
8. Blade embankment	432 hr.	3.00	3.00	3.50
9. Overhaul	80,380 y. qtr.	.05	.08	.05
10. Sprinkling	3,077 M gal.	1.00	1.25	1.00
11. Cl. A conc., gird. and slabs.	927 c. y.	19.00	20.80	22.50
12. Cl. A conc., bent and abut.	204 c. y.	20.00	21.30	22.50
13. Cl. A conc., culv	758 c. y.	19.00	19.00	20.00
14. Reinf	370,149 lb.	.04	.042	.04
15. Cast steel brg. plate	15,650 lb.	.10	.10	.12
16. Struct. steel	10,280 lb.	.095	.10	.12
17. Struct. steel, I-beam	35,650 lb.	.059	.06	.07
18. 15-in. sq. precast conc. test piling	95 l. f.	4.00	5.00	5.00
19. 15-in. sq. precast conc. piling	1,835 l. f.	3.25	3.30	3.50
20. 16-in. sq. precast conc. test piling	145 l. f.	4.10	5.00	6.00
21. 16-in. sq. precast conc. piling	1,355 l. f.	3.35	3.85	4.50
22. Railing, type P	1,508 l. f.	3.00	2.60	3.00
23. Dry riprap, type A	861 c. y.	3.50	3.50	3.00
24. Grout riprap, type A	72 c. y.	7.50	8.00	7.50
25. Com. mortar riprap	182 c. y.	9.00	10.00	8.00
26. Grass retards	1,200 c. y.	1.25	1.40	1.40
27. Mulch sodding	180 c. y.	1.00	1.00	1.25
28. Rock retards	40 c. y.	4.00	3.50	3.75
29. Right-of-way markers	77 ea.	1.25	1.50	1.50
30. Spot sodding	42,570 s. y.	.025	.025	.02
31. Rolling	854 hr.	2.00	2.60	4.50
32. 16-in. oct. precast conc. piling	580 l. f.	3.60	3.85	4.50
33. 16-in. oct. prec. conc. test piling	70 l. f.	4.00	5.00	6.00
34. 18-in. oct. prec. conc. piling.	450 l. f.	5.00	4.55	6.50

or ocean freighters



DOCK WALL FOR
NATIONAL GYPSUM COMPANY
SAVANNAH, GA.

Abbott, Merkt & Company, New York, N.Y.
Engineers

George A. Fuller Co., New York, N.Y.
General Contractor

The Tidewater Construction Corp., Norfolk, Va.
Pile Driving Contractor

Big Bethlehem Ropes on this giant stripping shovel

Bethlehem's improved plow steel, Purple Strand hoist ropes are used on this 35 cu. yd. stripping shovel. These $2^1/_8$-in. ropes are 6 x 37 lang lay construction with independent wire rope centers.

Bethlehem has recently installed special equipment for the manufacturing of these extra-size, heavy-duty ropes. This increase in facilities gives Bethlehem an even greater range of ropes to meet the needs of all excavating, construction, mining and material-handling operations.

Bethlehem Road Steel in Pennsylvania's Super Highway

Contractors for many sections of the new Pennsylvania turnpike have purchased Bethlehem road steel for this highway. Bar mats, expansion joints, reinforcing bars, dowels, bar ties and piling are among the Bethlehem products going into the 160-mile road.

Road steel is stocked in 15 Bethlehem warehouses in major construction areas. Deliveries can be scheduled to meet road building requirements—material is on hand in the quantity called for at the time it is needed.

BETHLEHEM STEEL COMPANY

PIERS AND ABUTMENTS PIT RIVER BRIDGE

OWNER: Bureau of Reclamation, Sacramento, Calif.

PROJECT: Construction of abutments and piers for Pit River Bridge in connection with relocation of Southern Pacific Railroad and U. S. Highway 99, Kennett Division, Central Valley Project, Calif. Bridge to be double-decked to accommodate highway at upper level and railroad facilities at lower level. Located between Redding and Delta, Calif. Four abutments and ten piers are required. Piers to be of hollow concrete construction, the largest being 172.65 ft. high. Concrete in piers 2, 3, and 4 to be artificially cooled by pumping water through pipes embedded in concrete.

CONDITIONS: The Government is to furnish cement, sand, gravel, reinforcing steel and all other materials which are to become part of completed structure. Highway transportation available. Project to be completed in 16½ months. Wage rates are: skilled, $1.10 to $1.50 per hr.; semi-skilled, 75c. to $1.10; and common labor, 75 to 80c. per hr.

BIDS: Ten bids were received October 5, 1939, ranging from the contract low of $1,138,288 to $1,768,505.

LOW BIDDERS:

1. Union Paving Co., San Francisco, Calif. (contract) $1,138,288
2. Heafey-Moore, and Fredrickson & Watson Constr. Co. (joint bid) Oakland, Calif... 1,162,083
3. MacDonald & Kahn Co., Ltd., San Francisco, Calif. 1,306,103

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing	24 ac.	$100.00	$322.00	$125.00
2. Common excav., abut. and piers	246,000 c. y.	1.30	.46	.65
3. Rock excav., abut. and piers	36,000 c. y.	1.35	1.50	3.00
4. Backfill	243,000 c. y.	.25	.22	.25
5. Compacting backfill	136,000 c. y.	.25	.25	.50
6. Dry-rock paving	200 s. y.	4.30	4.50	3.00
7. Concrete abutments	7,810 c. y.	7.00	6.60	7.50
8. Conc., piers 1 to 7, below top of bases	23,300 c. y.	3.80	6.60	7.50
9. Conc., piers 1 to 7, above top of bases	60,320 c. y.	4.30	6.60	6.82
10. Conc., piers 8, 9 and 10	3,200 c. y.	6.00	6.60	7.50
11. Place reinforcing bars	10,920,000 lb.	.02	.02	.0175
12. Weld reinforcing bars	8,280 ea.	2.20	4.50	3.60
13. Cooling concrete	19,000 c. y.	.34	.64	.40
14. Inst. metal tubing and fittings	27,000 lb.	.30	.05	.25
15. Spec. finish conc. surface	900 s. y.	2.00	2.00	.65
16. Waterproof conc. surface	900 s.y.	1.50	1.00	.35
17. Inst. metal work, expansion joints	8,300 lb.	.30	.04	.10
18. Corr. metal pipe wells	306 l. f.	1.00	2.50	1.00
19. Inst. elec. metal conduits	220 l. f.	1.00	1.00	.35
20. Install electric cables	4,500 l. f.	.10	.50	.20
21. Construct sewer pipe drains	200 l. f.	3.00	2.00	1.00
22. Install misc. metalwork	20,000 lb.	.10	.05	.12

SUPERSTRUCTURE PIT RIVER BRIDGE

OWNER: Bureau of Reclamation, Kennett Division, Central Valley Project, Calif. R. S. Calland, acting supervising engineer.

PROJECT: Construction of superstructure for the combination railroad and highway bridge over Pit River for relocation of Southern Pacific Railroad and U.S. Highway 99. Bridge is located between Redding and Delta, Calif.

CONDITIONS: Government to furnish all materials to be part of completed structure except steel for spans and bents. Shipment of steels from shipping point (Gary, Ind., or Chicago) to Redding and Delta, Calif., to be made on Government bills of lading. Access from existing roads to site of work to be provided by contractor. Safety nets required in superstructure construction. Work to be completed in 585 calendar days. Wage rates are: skilled labor, $1.10 to $1.50 per hr.; semi-skilled, 75c. to $1.10; and common, 75 to 80c. Southern Pacific Railroad and U.S. Highway 99 near bridge site.

BIDS: Two bids were received Jan. 16, 1940, the low, $2,588,354, and $2,750,321. Under low bid Government will be required to transport 20 carloads of equipment to job and 15 carloads from job.

LOW BIDDERS:

1. American Bridge Co., Pittsburgh, Pa. (contract) $2,588,354
2. Bethlehem Steel Co., San Francisco, Calif... 2,750,321

Item	Quan.	Unit Prices (1)	(2)
1. Furn. and erect carbon steel in spans 1, 10, 11, 12 and 13 and bents 1, 2, 3, 4 and 5	2,940,000 lb.	$0.0615	$0.0655
2. As above, in spans 2 to 9 inc	10,710,000 lb.	.064	.069
3. Silicon steel, spans 2 to 9 inc	19,540,000 lb.	.0715	.0711
4. Cast steel and pins and rockers	1,030,000 lb.	.121	.196
5. Constr. railroad floor, incl. timber floor, metal walkway plates fire protect., metal handrails and tracks, complete	L.S.	33,415.00	35,500.00
6. Concrete, highway floor	5,550 c. y	20.00	26.00
7. Spec. finish, conc. surfaces	770 s. y.	1.00	1.25
8. Place reinforcing bars	1,300,000 lb.	.0221	.0144
9. Place rubber water stops in elastic-filler joints	930 l. f.	1.05	.25
10. Place elastic-filler mat'l. in elastic-filler joints	1,560 s. f.	.80	.265
11. Inst. metal handrail, highway floor	420,000 lb.	.021	.018
12. Inst. blast plates and manh. fr. and covers	35,000 lb.	.0165	.017
13. Install electrical conduits	305,000 lb.	.0315	.03
14. Inst. metal ladders and pipe handrails on piers and abutments	7,000 lb.	.0165	.122
15. Inst. metalwork for drainage sys	100,000 lb.	.0315	.093

HIGHWAY BRIDGE AND APPROACHES, WEST VIRGINIA

OWNER: State Road Commission, Charleston, W. Va.; W. C. Dick, engineer.

PROJECT: Construction of Pleasant View Bridge (No. 1547) and approaches, 1 mile north of Middlebourne on State Route 18, in Tyler County. Project includes erection of two 55-ft. and one 60-ft. I-beam spans on concrete substructure, and grading, draining, macadam base and surface treatment.

CONDITIONS: Construction to start not later than 5 calendar days after date of award, and to be completed within 100 working days. Materials to be furnished by contractor. B. & O. R.R. passes through Sisterville, 11 miles from project site. Prevailing wage rates are: skilled, $1.00 per hr.; semi-skilled, 50c. per hr.; and common, 40c. per hr.

BIDS: Five bids were received on April 11, ranging from $36,508 to $44,429. Contract was awarded to the low bidder on May 24.

LOW BIDDERS:

1. C. C. Dodd Constr. Co., Spencer, W. Va..... $36,508
2. Sun Constr. Co., Benwood, W. Va..... 36,871
3. Fuccy Bros., Weston, W. Va..... 40,964

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Dry excav	700 c. y.	$2.50	$0.80	$1.00
2. Wet excav	70 c. y.	4.00	2.00	5.00
3. Rock excav	50 c. y.	6.00	4.00	6.00
4. Cl. A conc.-super	135 c. y.	20.00	17.30	21.00
5. Cl. B conc.-sub	92 c. y.	18.00	17.25	20.00
6. Cl. B conc	266 c. y.	15.80	16.75	18.00
7. Conc. railing	347 l. f.	3.80	4.20	3.00
8. Reinf	39,756 lb.	.045	.04	.0425
9. El. weld. wire fabric	2,070 lb.	.08	.06	.10
10. Steel superstruct	L.S.	8,900.00	7,461.00	9,000.00
11. Bit. waterproofing	17 s. y.	1.00	.55	1.50
12. Clear rt. of way	2,100 l. f.	.02	.04	.05
13. Unclass. excav	15,800 c. y.	.35	.58	.60
14. Overhaul	25,000 st. y.	.01	.015	.02
15. Struct. excav	180 c. y.	1.00	1.25	1.50
16. Macadam base	1,085 c. y.	4.50	4.40	4.50
17. Surf. aggr. limestone	220 tons	3.50	3.70	4.00
18. Tar, prime	2,000 gal.	.17	.13	.20
19. Tar, seal	4,000 gal.	.17	.13	.20
20. Paved or coated pipe	64 l. f.	2.20	2.10	2.50
21. Rein. conc. pipe	230 l. f.	2.00	1.90	2.25
22. Cl. B conc	10.c. y	16.00	17.00	20.00

PASSAIC RIVER BRIDGE NEW JERSEY

OWNER: New Jersey State Highway Dept., E. D. Sterner, commissioner, Trenton N. J.; Morris Goodkind, bridge engineer. Ash, Howard, Needles & Tammen, consulting engineers.

PROJECT: Constructing superstructure of bridge across Passaic River between Newark and Kearny, on Route 25, New Jersey. Consists of lift span 332½ ft. long; two towers each 24 ft. long; two approach girder spans each 112 ft. long; and seventeen approach girder spans each about 80 ft. long. Over-all length of bridge about 2,000 ft.

CONDITIONS: Contractor to furnish all materials and complete work in about 15 months. Rail, highway and water transportation available. Wages prevailing in area range from $1.25 to $2.00 per hr. for skilled labor; $1.12½ to $1.25 for semi-skilled; and $1.12½ per hr. for common labor.

BIDS: Four bids were opened October 17, 1939, ranging from the contract low of $1,099,506 to $1,275,640 for the third low. High bid amount not available.

LOW BIDDERS:

1. American Bridge Co., New York, N. Y. (contract) $1,099,506
2. Harris Structural Steel Co., New York, N. Y. 1,229,433
3. Bethlehem Steel Co., Bethlehem, Pa. 1,275,640

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Structural steel, lift span, towers, flanking span	6,630,000 lb.	$0.0786	$0.0875	$0.0912
2. Galv. span roadway floor	L.S.	32,569.00	36,600.00	33,750.00
3. Lift span sidewalk floor	L.S.	11,836.00	13,275.00	10,700.00
4. Concrete, counterweight	560 c. y.	20.15	22.00	34.50
5. Cl. B. conc., structures	75 c. y.	42.00	36.50	26.00
6. Reinforcing steel, struct.	10,000 lb.	.095	.09	.054
7. Counterweight ropes	92,000 lb.	.1492	.1875	.257
8. Balance chains	123,000 lb.	.0618	.081	.0875
9. Counterweight sheaves	300,000 lb.	.1145	.162	.144
10. Machinery	190,000 lb.	.3418	.33	.30
11. Cranes and hoists	L.S.	3,533.00	3,100.00	3,600.00
12. Electrical equipment	L.S.	139,330.00	143,750.00	163,446.12
13. Elevators	L.S.	12,147.00	13,200.00	11,900.00
14. Houses and equipment	L.S.	14,406.00	14,500.00	8,600.00
15. Pier rooms and equipment	L.S.	6,185.00	9,900.00	6,900.00
16. Structural steel, approach spans	3,271,400 lb.	.0573	.064	.0692
17. Railing	2,746 l. f.	5.50	9.90	7.70
18. 6-in. c. i. water pipe	193 l. f.	8.56	8.10	4.90
19. 8-in c. i. water pipe	382 l. f.	8.36	9.50	5.80
20. 3-in. gen. wrt. iron conduit	1,100 l. f.	1.47	2.80	1.25
21. Manhole with cover and frame	1 ea.	361.00	185.00	360.00
22. Clearing site	L.S.	13,000.00	15,500.00	23,250.00

RAISING BRIDGE, WASHINGTON AND OREGON

OWNER: Wauna Toll Bridge Co., Walla Walla, Wash.; C. G. Huber, Portland, Ore., engineer.

PROJECT: Raising Bridge of Gods over Columbia River 45 ft.; grading approaches and enlarging piers, at Cascade Locks, Ore., between Washington and Oregon.

CONDITIONS: Contractor to furnish all materials, and finish project by August 15, 1940. Rail, highway and water transportation facilities available. Wage rates are: skilled, $1.50 per hr.; semi-skilled, $1.25 per hr.; and common 60c. per hr.

BIDS: Five bids were received August 3, 1939, ranging from the contract low of $438,543 to $532,442.

LOW BIDDERS:

1. Tavares Constr. Co., Los Angeles, Calif. $438,543
2. Pacific Bridge Co., San Francisco, Calif. 449,815
3. MacRae Brothers, Seattle, Wash. 486,636

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Structural excavation	1,040 c. y.	$2.00	$3.52	$6.00
2. Rock revet., pier 1W	350 c. y.	5.00	3.50	3.70
3. Class A concrete	160 c. y.	30.00	38.30	21.00
4. Class B concrete	160 c. y.	30.00	28.90	21.00
5. Class C concrete	2,178 c. y.	25.00	19.78	22.00
6. Class D concrete	2,998 c. y.	25.00	16.95	20.00
7. Class E concrete	163 c. y.	16.00	15.00	20.00
8. Reinforcing steel	495,329 lb.	.075	.0471	.05
9. Struct. steel, appr. span	620,600 lb.	.09	.075	.0935
10. Struct. jacking oper.	952,000 lb.	.11	.062	.15
11. Suspended span	L.S.	16,500.00	71,158.00	16,500.00
12. Jacking operations	L.S.	34,500.00	86,610.00	68,000.00
13. Remove and replace timber	L.S.	1,700.00	1,350.00	13,500.00
14. Nailing strips	7Mbm.	105.00	150.70	120.00
15. Lumber, west approach	800Mbm.	52.00	45.70	65.00
16. Railing	1,946 l. f.	1.50	.435	1.00
17. Clear and grub (Ore.)	L.S.	1,000.00	6,000.00	2,275.00
18. Approach grading (Ore.)	16,600 c. y.	.35	.35	.40
19. Approach grading (Wash.)	L.S.	1,600.00	5,000.00	1,025.00
20. Fine grading	L.S.	700.00	2,500.00	1,050.00
21. Crushed rock	2,765 c. y.	3.50	2.00	1.90
22. Bitum. macadam wear. surf.	5,170 s. y.	1.00	1.00	.40
23. Bitum. treatment, shoulders	3,120 s. y.	.35	.40	.20
24. Electrical work	L.S.	8,000.00	6,607.50	9,000.00
25. Walk, curb, basin, drain	L.S.	1,000.00	1,000.00	820.00
26. Toll house, stairway, water dept.	L.S.	1,000.00	1,100.00	800.00

HIGHWAY BRIDGE, WASHINGTON

OWNER: Washington State Highway Department; L. V. Murrow, director.

PROJECT: Construction of Crosby River bridge and approaches in Renton, King County. Total length 0.125 mi., including a steel plate girder bridge 100 ft. long. Time for completion is 240 calendar days.

BIDS: Five bids were opened Apr. 11, 1939, ranging from the contract low of $85,941 to $111,455.

LOW BIDDERS:

1. David Nygren, Seattle (contract) $85,941
2. M. P. Butler, Seattle 96,260
3. Toney Romano, Seattle 97,575

APPROACHES

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear and grub	L.S.	$1,000.00	$1,000.00	$1,000.00
2. Unclass. excav.	540 c. y.	.50	.75	1.00
3. Struct. excav.	80 c. y.	1.00	1.50	1.50
4. Selected borrow	70 c. y.	1.00	1.00	2.00
5. Cr. stone surf., top course	40 c. y.	3.00	3.00	3.00
6. Grading parking strips	135 l. f.	.50	.25	.30
7. Conc. pavt. h.e.s cement	2,274 s. y.	3.00	3.20	2.85
8. Conc. bridge pavt. h.e.s. cement	67 c. y.	25.00	15.50	18.00
9. Reinf. type No. 2	11,500 lb.	.05	.055	.055
10. Dowel bars, rubber caps	655 ea.	.25	.25	.25
11. Dowel bars without caps	1,267 ea.	.20	.15	.20
12. Integral concrete curb	277 l. f.	.50	.50	.35
13. Special concrete curb	55 l. f.	1.00	1.00	1.00
14. Conc. sidewalk h.e.s. cement	198 s. y.	2.00	1.75	2.00
15. Conc. sidewalk, integral curb, h.e.s. cement	15 c. y.	30.00	20.00	27.00
16. Reinf. steel	2,000 lb.	.05	.055	.05
17. Conc. driveways, h.e.s. cem.	226 s. y.	3.00	3.50	2.50
18. Conc. Federal air markers	1 ea.	10.00	10.00	10.00
19. Adjusting catch basin	1 ea.	20.00	30.00	15.00
20. Remove exist. conc. pavt.	1,582 s. y.	.50	.50	.50
21. Remove exist. conc. curb	373 l. f.	.10	.30	.30
22. Remove exist. conc. sidew.	320 s. y.	.20	.40	.25
23. Remove, reset lamp posts	3 ea.	50.00	175.00	30.00
24. Remove, reset c. i. inlets	5 ea.	20.00	20.00	20.00
25. Remove, relay pkwy. cable	330 l. f.	.50	.60	.20
26. Remove, relay 10-in. sewer pipe	L.S.	50.00	90.00	100.00
27. Relay 8-in. conc. pipe	20 l. f.	.50	.80	1.00
28. 6-in. Conc. or vit. sewer pipe	180 l. f.	.75	1.00	.60
BRIDGE				
29. Struct. excav.	915 c. y.	6.00	6.00	7.00
30. Concrete, class A	350 c. y.	25.00	27.00	28.00
31. Concrete, class B	460 c. y.	25.00	27.00	27.00
32. Concrete, class D	204 c. y.	25.00	25.00	24.00
33. Reinf. conc. rail	309 l. f.	4.00	4.00	4.00
34. Reinf. steel	126,000 lb.	.05	.055	.05
35. Struct. silicon steel	171,000 lb.	.07	.085	.0875
36. Struct. carbon steel	137,000 lb.	.06	.08	.08
37. Cast steel	4,600 lb.	.15	.20	.20
38. Cast steel drains	14 ea.	25.00	25.00	25.00
39. Copper seals	61 lb.	1.00	1.00	1.00
40. Timber	64.3 M fbm	50.00	57.00	55.00
41. Furnish. creo. wood piling	1,540 l. f.	.60	.65	.65
42. Drive wood piles	44 ea.	12.00	15.00	15.00
43. Furnish, drive wood test piles	1 ea.	100.00	200.00	100.00
44. Furnish, wood trestle piles	860 l. f.	.15	.15	.15
45. Drive wood trestle piles	36 ea.	12.00	12.00	12.00
46. Lighting system	L.S.	1,500.00	1,750.00	1,600.00
47. Remove exist. structure	L.S.	5,000.00	6,000.00	8,000.00

HIGHWAY UNDERPASS PHOENIX, ARIZONA

OWNER: Arizona State Highway Commission, Phoenix, Ariz., W. R. Hutchins, State Highway Engineer.

PROJECT: Construction of underpass structure, approaches and incidental work under railroad tracks at South Central Avenue, Phoenix. Consists of two tunnels, 21 ft. clearance, each to be of road width. Pedestrian tunnels each side of roadway. Underpass 950 ft. long; superstructure 357.6 ft. long.

CONDITIONS: Project is located in center of city, and storage space for materials is limited. Traffic must be maintained throughout construction. All materials to be furnished by contractor. Contract awarded to low bidder on June 1, and must be completed in 1 year. Labor rates on the underpass are: skilled, $1.00 per hr.; semi-skilled, 68¾c. per hr.; and common labor, 62½c. per hr.

BIDS: Ten bids were received on May 16, ranging from the contract low of $178,892 to the high of $219,321.

LOW BIDDERS:

Lee Moor Constr. Co., El Paso, Tex. (contract)	$178,892
Tanner Constr. Co., Phoenix, Ariz.	180,135
W. E. Hall Constr. Co., Phoenix, Ariz.	180,598

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Struct. excav	24,233 c. y.	$0.61	$0.64	$0.50
2. Aggr. base course	795 ton	1.00	1.00	1.25
3. Sprinkling	390 M gal.	1.00	1.00	1.50
4. Rolling	117 hr.	3.50	3.00	3.50
5. Cl. A conc	1,111 c. y.	18.00	18.00	18.00
6. Cl. D conc	2,848 c. y.	18.00	17.00	18.00
7. Reinf.	691,760 lb.	.044	.04	.043
8. Struct. steel	82,771 lb.	.067	.085	.12
9. 6" conc. pavement	3,138 s. y.	2.00	2.60	2.25
10. 6" conc. driveways	143 s. y.	2.00	2.60	2.50
11. Spec. conc. trk. base	50 s. y.	2.00	2.85	3.50
12. 3' valley gutter	420 l. f.	1.15	1.06	1.25
13. Comb. curb. & gutter, Type G	913 l. f.	.90	1.12	1.25
14. Single curb, Type G	84 l. f.	.65	.75	1.00
15. Spec. curb ends & catch basins (comb.)	2 ea.	85.00	65.00	100.00
16. Spec. curb ends	2 ea.	6.00	15.00	50.00
17. Spec. curb castings	6 ea.	25.00	30.00	35.00
18. 4" conc. sidewalk	6,854 s. f.	.19	.19	.20
19. Plant mix (ex. cem. agt.)	802 ton	3.40	3.00	3.50
20. Road oil (plt. mixed oil cake & seal coat)	38 ton	15.00	17.00	18.00
21. Plant mixed seal coat	75 ton	4.00	4.50	5.00
22. 4" vit. clay pipe (open jointed drain tile	4,050 l. f.	.40	.35	.40
23. 8" vit. clay pipe	918 l. f.	1.50	1.85	.65
24. 12" vit. clay pipe	56 l. f.	1.50	1.56	1.25
25. 15" vit. clay pipe	397 l. f.	2.20	2.30	1.75
26. 15" vit. clay pipe (Det. X)	39 l. f.	3.40	3.56	3.00
27. 18" vit. clay pipe	32 l. f.	2.95	3.64	2.75
28. 30" vit. clay pipe	80 l. f.	8.00	7.70	6.50
29. 1" copper pipe	249 l. f.	.60	.90	.50
30. 6" cast iron pipe	258 l. f.	1.60	2.00	1.35
31. Reconst. 6" cast iron wat. main	54 l. f.	.60	1.00	1.00
32. 8" cast iron pipe	26 l. f.	2.30	3.70	2.00
33. Reconst. 8" cast iron wat. main	786 l. f.	.95	1.75	1.25
34. 16" cast iron pipe	85 l. f.	4.85	5.55	6.00
35. 30" cast iron pipe	60 l. f.	14.50	14.40	15.00
36. Std. manhole (No. 1)	8 ea.	160.00	94.00	100.00
37. Std. manhole (No. 2)	4 ea.	265.00	145.00	100.00
38. Manhole (W. U. std.) salv. rings & covers	3 ea.	135.00	106.00	125.00
39. Manhole (M. S. T. & T. Co. std.) salv. rings & covers	3 ea.	155.00	132.00	125.00
40. Reset. manhole cov. to grade	3 ea.	16.00	10.00	10.00
41. Reset drop inlet grates to gr	2 ea.	16.00	15.00	15.00
42. Reset fire hydrant	1 ea.	50.00	20.00	50.00
43. Std. catch basins (No. 2)	3 ea.	165.00	70.00	50.00
44. Std. catch basins (No. 3)	1 ea.	165.00	80.00	75.00
45. Membrane and asph. plk. waterproofing	L. S.	6,500.00	6,600.00	6,000.00
46. 2" pipe handrail	125 l. f.	1.30	2.00	1.75
47. Fur. & inst. conduit, W. U. cable	L. S.	950.00	1,250.00	900.00
48. Fur. & inst. cond., M.S.T.&T.Co. cables	L. S.	2,000.00	3,282.15	1,250.00
49. 6" copper seal	425 l. f.	.30	.42	.50
50. 8" copper seal & flashing	931 l. f.	.35	.52	1.00
51. Cartouches & portal lettering	L. S.	1,175.00	960.00	1,000.00
52. ½" Gunite (gun finish)	464 s. y.	.50	1.35	1.25
53. Autom. gas. eng. dr. pump, 2000 gpm	L. S.	2,800.00	3,250.00	3,000.00
54. Autom. elect. dr. pump 500 gpm	L. S.	1,400.00	1,250.00	1,250.00
55. Pump house discge. line	L. S.	1,000.00	1,115.00	1,250.00
56. Drainage sys., incl. rdwy. grates & sumps	L. S.	1,600.00	1,600.00	2,000.00
57. Elec. light. system	L. S.	9,500.00	10,000.00	8,000.00
58. Remodel basements	L. S.	800.00	775.00	900.00
59. Remov. pavmt. & driveways	7,770 s. y.	.20	.22	.45
60. Remov. conc. sidewalk	7,915 s. y.	.04	.032	.05
61. Remov. conc. curb & gutter	580 l. f.	.12	.25	.20

BRIDGE AND GRADE SEPARATION, MICHIGAN

OWNER: Michigan State Highway Commission, Lansing; M. D. Van Wagoner, commissioner.

PROJECT: Constructing 15 span reinforced concrete and steel bridge and grade crossing elimination structures over Saginaw River and Michigan Central Railroad tracks on Court St., Saginaw, Mich. Bridge portion of structure consists of one 40-ft. rolled beam span, one 120-ft. clear deck girder span providing for future bascule opening, three 85-ft. deck girder spans and three 40-ft. rolled beam spans supported by two bascule type piers. Both structures provide for 6-ft. sidewalks and 42-ft. roadway.

CONDITIONS: Local traffic access to Court St. buildings must be maintained. Railroad traffic schedules are also to be kept. Contractor to furnish all materials and work must be completed by June 1, 1940. Rail, highway and water transportation available. Minimum wage rates for the project are: skilled, $1.12½ per hr.; semi-skilled, 75c. per hr.; and common, 50c. per hr.

BIDS: Seven bids were received June 21, 1939, ranging from the contract low of $407,769 to $460,048.

LOW BIDDERS:

1. Wm. J. Meagher, Bay City, Mich. (contract) $407,769
2. L. A. Davidson, Lansing, Mich. 419,729
3. Owen-Ames-Kimball Co., Grand Rapids, Mich. 421,157

GRADE SEPARATION

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Dry excavation	1,887 c. y.	$1.50	$1.00	$2.00
2. Wet excavation	180 c. y.	3.00	4.00	4.00
3. Timber sheet piling, left in place 3-in. butt jt	344 s. f.	.50	.50	.50
4. Steel sheet piling, left	5,392 s. f.	1.00	.70	1.50
5. Tr. timber piles, furn	80 l. f.	.75	1.20	.60
6. Tr. timber piles, driven	72 l. f.	1.00	1.00	.80
7. Conc., grade A, substr	999 c. y.	16.00	16.00	18.00
8. Conc., grade A, superstr	422 c. y.	13.00	10.00	20.00
9. Heat and house mass conc	235 c. y.	1.50	1.50	1.50
10. Heat and house neat conc	227 c. y.	3.50	3.50	3.50
11. Cement	2,134 bbl.	2.25	2.00	2.25
12. Reinforcing steel	171,634 lb.	.04	.035	.055
13. Structural steel	434,000 lb.	.0493	.045	.055
14. Railing	770 l. f.	5.00	4.00	5.00
15. Field painting	L.S.	500.00	500.00	1,000.00
16. Rubbed surface finish	12,354 s. f.	.10	.10	.10
17. Special surface finish	389 s. f.	.25	.50	.15
18. ½-in. joint filler, cork	45 s. f.	.50	1.00	.50
19. Copper	606 lb.	.30	.50	.80
20. Sidewalk frame and cover	6 ea.	17.75	10.00	10.00
21. 6-in. std. wr. iron pipe	81 l. f.	3.00	2.00	5.00
22. 6-in. std. c.i. pipe	31 l. f.	3.20	2.00	5.00
23. Safety coil vault	2 ea.	25.00	10.00	20.00
24. Service connection	L.S.	220.00	145.00	160.00
25. Br. rdwy. lighting circuit	L.S.	975.00	568.00	600.00
26. Under bridge lighting	L.S.	313.00	175.00	200.00
27. Lighting unit, end type	2 ea.	115.00	102.00	125.00
28. Lighting unit, intermed. type	4 ea.	117.00	106.00	118.00

RIVER BRIDGE

Item	Quan	Unit Prices (1)	(2)	(3)
1. Remove existing struct	L.S.	$18,746.27	$18,000.00	$19,000.00
2. Dry excavation	454 c. y.	1.50	2.00	2.00
3. Wet excavation	3,863 c. y.	3.00	10.00	4.00
4. Furn. timber piles	45,874 l. f.	.35	.35	.20
5. Drive timber piles	43,832 l. f.	.40	.20	.30
6. Furn. tr. timber piles	5,982 l. f.	.70	.80	.60
7. Drive tr. timber piles	5,640 l. f.	.30	.50	.30
8. Tr. protection piles, furn	5,760 l. f.	.80	.80	.65
9. Tr. protection piles, driven	5,568 l. f.	.35	.50	.40
10. Tremie concrete	1,289 c. y.	15.00	20.00	13.00
11. Grade B conc., substr	4,578 c. y.	15.00	18.00	12.00
12. Grade A conc., substr	1,093 c. y.	15.00	12.00	18.00
13. Grade A conc., superstr	797 c. y.	13.00	10.00	20.00
14. Heat and house mass conc	2,683 c. y.	1.50	1.50	1.50
15. Heat and house neat conc	708 c. y.	3.50	3.50	3.50
16. Cement	11,056 bbl.	2.25	2.00	2.25
17. Reinforcing steel	292,188 lb.	.04	.035	.055
18. Struct. steel	1,396,000 lb.	.0549	.05	.062
19. Cast steel bearings	1,330 lb.	.30	.30	.30
20. Bronze plates	302 lb.	.40	.50	.50
21. Railing	1,110 l. f.	5.00	4.00	5.00
22. Field painting	L.S.	1,000.00	1,400.00	2,820.00
23. Rubbed surface finish	29,284 s. f.	.10	.10	.10
24. ½-in. joint filler, cork	70 s. f.	.50	1.00	.50
25. 1-in. joint filler, cork	38 s. f.	.80	1.00	1.00
26. Copper	1,005 lb.	.30	.50	.80
27. Sidewalk frame and cover	12 ea.	17.75	10.00	10.00
28. 3-in. galv. iron downspout	126 l. f.	1.50	.50	.60
29. Cast iron nosing	876 lb.	.30	.10	.10
30. Casting, c.i. type 1 outlet	16 ea.	10.00	5.00	6.00
31. Casting, c.i. type 2 outlet	12 ea.	10.00	5.00	10.00

32. Furn. tr. timber and lumber	23.8 Mbm.	72.00	80.00	80.00
33. Place tr. timber and lumber	23.8 Mbm.	30.00	30.00	60.00
34. Miscellaneous hardware	9,500 lb.	.18	.10	.10
35. Safety coil vault	2 ea.	25.00	10.00	20.00
36. Br. rdway lighting circuit	L.S.	1145.00	864.00	950.00
37. Navigation lighting	L.S.	480.00	476.00	525.00
38. Lighting unit, end type	2 ea.	115.00	102.00	125.00
39. Lighting unit, intermed. type	8 ea.	117.00	106.00	125.00
40. Channel excavation	3,100 c. y.	1.50	1.00	1.00

MISSISSIPPI RIVER BRIDGE

OWNER: City of Greenville, Miss.; engineers, Ash-Howard-Needles & Tammen, New York and Kansas City, Mo.

PROJECT: Contract No. 3, embankment; contract No. 4, substructure of viaduct spans for the $4,528,000 Mississippi River bridge to be constructed across the Mississippi River 8 miles south of Greenville, Miss.

CONDITIONS: Transportation by rail, highway and water is available. Labor rates are as follows: skilled, 75c. per hr.; semi-skilled, 45c. per hr.; common, 25c. per hr.

LOW BIDDERS: Contract 3:

1. W. G. Cook, Forest, Miss. (contract) $77,500
2. Doulette & Ewin, New Orleans, La. 83,600
3. Uvalde Construction Co., Dallas, Texas 86,878

PROJECT No. 3

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Embankment	140,000 c.y.	$0.325	$0.34	$0.39
2. Concrete riprap	5,000 s. y.	3.90	4.40	3.95
3. Concrete cul pipe	200 l. f.	4.00	4.00	3.39

LOW BIDDERS: Contract 4:

1. F. V. Ragsdale Co., Memphis (contract) $534,300
2. W. L. Sharpe Construction Co., Memphis. ... 556,200
3. Baggett Construction Co., Memphis. 593,880

PROJECT No. 4

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Conct. footings and piers	4,900 c. y.	$19.00	$20.50	$16.00
2. Concrete abutments	5,000 c. y.	19.00	20.00	23.50
3. Conct. underpass and retaining walls	800 c. y.	19.00	20.00	25.00
4. Reinforcing steel	780,000 lbs.	0.0425	.045	.0425
5. For foundation piles in piers and abutments	3,900,000 lbs.	.042	.043	.046
6. Foundation piles for bents	94,000 l. f.	1.35	1.50	1.27
7. Grading	60,000 c. y.	.25	.30	.40

GRADE SEPARATION INDIANA

OWNER: Indiana State Highway Commission, T. A. Dicus, Chairman, Indianapolis, Ind. M. R. Keefe, engineer.

PROJECT: Grade separation over Pennsylvania Railroad at Road 6, Hobart, Lake County, Indiana. Involves construction of four reinforced concrete girder spans, each 36-ft.; continuous steel beams, two spans 50-ft. 7-in., and one 60¾-ft.

CONDITIONS: Rail and highway facilities available. Materials to be furnished by contractor. Project to be completed by Oct. 1, 1941. Wages are: skilled, 75c. per hr.; semi-skilled, 60c.; and common labor, 50c. per hr.

BIDS: Four bids were received June 16, 1939, ranging from contract low of $137,630 to $154,681. Awarded Nov. 4.

LOW BIDDERS:

1. Powers-Thompson Constr. Co., Joliet, Ill. $137,630
2. J. C. O'Connor & Son, Fort Wayne, Ind. 141,927
3. Reith-Riley Co., Goshen, Ind. 150,562

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Class D concrete	895.2 c. y.	$29.50	$33.00	$31.00
2. Class E concrete	189.2 c. y.	15.00	20.00	22.00
3. Handrail	658 l. f.	5.00	4.00	5.00
4. Foundation excav. (unc.)	623 c. y.	2.50	1.50	2.50
5. Common excav.	1,982 c. y.	.50	.75	.40
6. Special borrow	64,877 c. y.	.45	.46	.45
7. Spec. filling material	10,332 c. y.	.45	.46	.45
8. Structural steel	181,781 lb.	.056	.058	.065
9. Reinforcing steel	205,558 lb.	.045	.042	.055
10. Cast iron	316 lb.	.12	.12	.15
11. Rein. conc. pavement	8,850 c. y.	2.75	2.50	2.50
12. Pav. expan. joint, type D	600 l. f.	.40	.50	.90
13. Flex. steel plate guard rail	2,636 l. f.	1.00	1.25	1.50
14. Top soil	23,420 s. y.	.25	.15	.40
15. Sodding	23,420 s. y.	.25	.25	.30
16. Remove paving	5,290 s. y.	.40	.40	.30
17. Remove sidewalk	70 s. y.	1.00	.40	.30
18. Finish shoulders and ditches	3,448 l. f.	.20	.25	.30
19. Concrete sidewalk	70 s. y.	2.00	2.50	3.00
20. Integral curb walk	25 s. y.	3.00	2.60	3.50
21. Standard lip gutter	2,589 l. f.	.80	1.00	1.25
22. Special lip gutter	73 l. f.	1.00	3.00	2.00
23. Comb. curb and gutter	500 l. f.	1.00	1.50	1.80
24. Std. curb inlet, types D, C	7 ea.	50.00	175.00	60.00
25. Spec. curb. inlet, types D, C	1 ea.	75.00	200.00	75.00
26. Thickened rein. conc. pavement	175 s. y.	3.50	4.00	3.00
27. Pavmt. constr. joints, type D	1,168 l. f.	.30	.40	.65
28. 6-in. dbl. roll copper gutter	49.6 l. f.	1.50	1.50	3.00
29. 6-in. gutter circles	12 ea.	1.00	1.50	2.50
30. Peat removal	200 c. y.	.50	.50	.50
31. Bitum. stabilized mixture	499 ton	3.50	8.00	4.50
32. Remove pipe and manhole	L. S.	250.00	25.00	150.00
33. Aggregate, sub-surf. drains	24 s. y.	3.00	4.50	3.00
34. 1-in. cork, rubber or fiber expan. joints	124 l. f.	.50	.35	1.00
35. Pref. bitum. expan. joints (1-in.)	112 l. f.	.50	.35	1.00
36. Pref. bitum. coated corr. pipe (6-in.)	152 l. f.	1.00	1.25	1.30
37. 12-in. V.C.; R.C.; C.I.; or conc. pipe	66 l. f.	1.25	1.30	1.50
38. 15-in. V.C.; R.C.; C.I.; or conc. pipe	166 l. f.	1.50	1.50	1.80
39. 12-in. corr. met. pipe	200 l. f.	1.25	1.25	1.50
40. 15-in. corr. met. pipe	16 l. f.	1.50	1.50	2.00
41. Bridge barriers	2 ea.	25.00	25.00	30.00

BRIDGE APPROACH CLEVELAND, OHIO

OWNER: Cuyahoga County Board of Commissioners, Cleveland, Ohio. J. O. McWilliams, Standard Building, engineer.

PROJECT: Constructing lakefront ramp of East Approach of Main Avenue Bridge, between West Third Street and Lakefront Road, Cleveland, Ohio.

CONDITIONS: Contractor to furnish all materials and complete project by June 25, 1940. Highway transportation facilities available. Wage rate on job are: skilled, $1.37 to $1.67½ per hr.; semi-skilled, $1.10 per hr.; and common, 90c. per hr.

BIDS: Seven bids were opened October 28, 1939, ranging from the contract low of $854,866 to $898,857.

LOW BIDDERS:

1. National Engr. & Contr'g. Co., Cleveland, Ohio (contract) $854,866
2. Lombardo Bros. Constr. Co., Cleveland, Ohio 857,930
3. Hunkin-Conkey Constr. Co., Cleveland, Ohio.. 858,992

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavation, structures	6,900 c. y.	$5.00	$7.00	$7.25
2. Borrow	10,000 c. y.	.60	.50	.75
3. Soil tests	10 ea.	150.00	100.00	150.00
4. Class A concrete	2,550 c. y.	13.00	14.00	13.00
5. Class B concrete	1,600 c. y.	45.00	25.00	25.00
6. Class C concrete	240 c. y.	10.00	12.00	12.00
7. Reinforcing steel	370,000 lb.	.04	.04	.05
8. Guniting	2,450 s. f.	.80	1.00	1.00
9. Structural steel	2,840 ton	189.00	176.50	178.40
10. Stairway	L. S.	2,000.00	1,500.00	2,000.00
11. Bridge rail	3,100 l. f.	6.50	10.00	9.00
12. Bridge decking	57,900 s. f.	1.23	1.30	1.15
13. Sidewalk decking	6,300 s. f.	1.45	1.50	1.45
14. Bridge light sys. (conduit)	6,900 l. f.	.80	.80	.80
15. Porous backfill	250 c. y.	3.00	3.00	3.00
16. Waterproofing, type A	2,500 s. y.	.55	.40	.60
17. Waterproofing, type B	160 s. y.	1.40	1.50	1.60
18. Rein. port. cem., conc. paving	2,500 s. y.	3.00	3.00	3.50
19. Bitum. macadam base crse.	600 s. y.	2.60	2.00	2.40
20. Hot mix, hot laid asph. conc. surf. crse.	800 s. y.	1.25	1.20	1.20
21. Concrete sidewalk	4,500 s. f.	.30	.30	.30
22. Stone curb and headers	2,200 l. f.	2.00	2.00	2.00
23. Stone coping	1,800 s. f.	.50	.75	.75
24. Stone masonry	5,800 c. f.	4.50	5.00	5.40
25. Manholes	24 ea.	200.00	200.00	175.00
26. Catch basins	11 ea.	125.00	125.00	100.00
27. 10-in. copper brg. steel pipe downspouts	270 l. f.	7.00	8.00	8.00
28. 12-in. cast iron pipe	130 l. f.	8.00	8.00	6.00
29. 12-in. rein. conc. pipe	250 l. f.	2.00	3.50	3.50
30. 12-in. vitr. sew. pipe	1,000 l. f.	2.60	3.00	2.50
31. 15-in. vitr. sew. pipe	800 l. f.	5.00	9.00	8.00
32. 18-in. vitr. sew. pipe	80 l. f.	7.00	13.00	11.00
33. 24-in. vitr. sew. pipe	50 l. f.	12.00	14.00	12.00
34. 24-in. vitr. sew. pipe storm sew	1,200 l. f.	.50	1.00	.80
35. Remove foot bridge	L. S.	8,500.00	8,500.00	8,500.00
36. Replace water main	L. S.	3,400.00	3,400.00	3,400.00
37. Maintain traffic, light signals, etc.	L. S.	1,000.00	1,000.00	1,000.00

WATERWORKS IMPROVEMENTS MISSISSIPPI

OWNER: City of Pascagoula, Mississippi. L. C. Winterton, Pascagoula, engineer.

PROJECT: Improvement of waterworks, consisting of laying approximately 50,000 ft. of new water mains, and removing and relaying about 6,000 ft. of 4 and 6-in. mains, together with necessary connections and fittings.

CONDITIONS: All materials to be furnished by contractor. Rail, road and water transportation available. Wage rates are: skilled, 75c. per hr.; semi-skilled, 45c.; and common labor, 25c. per hr.

BIDS: Thirteen bids were received on March 18, 1939, ranging from the contract low of $54,966 to $71,139.

LOW BIDDERS:

1. J. B. McCrary Co., Atlanta, Ga. (contract).... $54,966
2. C. H. Cash, Inc., Buena Vista, Ga..... 55,191
3. Boyce & Co., Clearwater, Fla..... 55,960

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 10-in. C. I. pipe	2,977 l. f.	$1.77	$1.85	$1.77
2. 8-in. C. I. pipe	6,527 l. f.	1.36	1.40	1.35
3. 6-in. C. I. pipe	10,363 l. f.	1.03	1.04	1.00
4. 4-in. C. I. pipe	22,085 l. f.	.77	.75	.74
5. 10-in. gate valves	8 ea.	59.30	65.00	71.00
6. 8-in. gate valves	14 ea.	36.60	40.00	38.00
7. 6-in. gate valves	19 ea.	24.50	27.00	25.00
8. 4-in. gate valves	52 ea.	15.50	17.00	19.00
9. 4-in. fire hydrants	31 ea.	45.75	52.00	47.00
10. 5-in. fire hydrants	39 ea.	56.75	65.00	57.50
11. Service line conn	425 ea.	3.00	4.00	4.20
12. Copper pipe, type K	8,510 l. f.	.27	.24	.25
13. Lumber, No. 2, com	1 M bm.	30.00	40.00	70.00
14. Excav	100 c. y.	.70	.50	1.00
15. Remove 6-in. C. I. pipe	2,156 l. f.	.25	.17	.45
16. Remove 4-in. C. I. pipe	3,946 l. f.	.25	.17	.40
17. Remove 6-in. gate valves	2 ea.	1.50	2.00	5.00
18. Remove 4-in. gate valves	5 ea.	1.50	2.00	3.00
19. Remove 5-in. fire hydrants	3 ea.	5.00	2.00	6.00
20. Remove 4-in. fire hydrants	8 ea.	4.00	2.00	6.00
21. Relay 6-in. C. I. pipe	2,456 l. f.	.29	.26	.35
22. Relay 4-in. C. I. pipe	4,696 l. f.	.28	.21	.29
23. Relay 6-in. gate valves	2 ea.	1.50	3.00	3.00
24. Relay 4-in. gate valves	5 ea.	1.50	3.00	2.50
25. Relay 5-in. hydrants	3 ea.	5.00	10.00	5.00
26. Relay 4-in. hydrants	8 ea.	4.00	10.00	5.00

WATER MAINS, KANSAS

OWNER: City of Wichita, Kansas; C. C. Ellis, City Clerk. Black & Veatch, Kansas City, Mo., engineers.

PROJECT: Constructing cast iron watermain to connect new wells with Wichita distribution system (Contract 6). Involves placing approximately 174,300 feet of cast iron water pipe, necessary fittings and specials, and valves.

CONDITIONS: Owner to furnish all cast iron pipe and all valves. Balance of materials to be furnished by contractor. Ground conditions good, sandy loam soil and level country. No rock formations anticipated. Project to be completed by May 18, 1940. Rail and highway transportation available. Wage rates are: skilled, $1.00 to $1.25 per hr.; semi-skilled, 60c. to $1.00; and common, 45c. per hr. Low bidder allowed 3½ per cent discount if awarded both sections of contract. As this was the case, total contract price should be $233,050. Unit prices are on the total amount, however, and no deductions have been made.

BIDS: Four bids were received on Section I, September 29, 1939, ranging from the contract low of $213,558 to $486,655. Eight bids were received on the same date for Section II, ranging from the contract low of $27,945 to $74,733.

SECTION I—PIPE LINES 30-IN. AND LARGER

LOW BIDDERS:

1. W. B. Carter, Wichita, Kan. (contract).....$213,558
2. Dobson & Robinson, Lincoln, Nebr..... 251,453
3. S. E. Evans Constr. Co., Ft. Smith, Ark..... 313,191

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 48-in. c. i. pipe, fittings, spec	93,100 l. f.	$1.33	$1.65	$2.05
2. 42-in. c. i. pipe, fittings, spec	27,200 l. f.	1.25	1.48	2.05
3. 36-in. c. i. pipe, fittings, spec	8,200 l. f.	1.15	1.24	1.89
4. 30-in. c. i. pipe, fittings, spec	7,300 l. f.	1.05	1.12	1.86
5. Crossing St. L. & S. F. RR	L.S.	3,190.00	2,850.00	3,000.00
6. Crossing A. V. I. RR. (3 times)	L.S.	525.00	360.00	450.00
7. Spec vacuum release valve struct., sta. 100	L.S.	715.00	675.00	250.00
8. Spec. pres. relief valve struct	L.S.	1,772.00	1,675.00	1,000.00
9. Spec. valve control struct	L.S.	1,593.00	1,620.00	1,300.00
10. Spec. vacuum release valve struct., sta. 299	L.S.	750.00	715.00	250.00
11. Cone valve vaults	5 ea.	1,698.00	1,584.00	1,200.00
12. State highway crossing	L.S.	1,735.00	1,590.00	1,750.00
13. Air release valves and housing manholes	45 ea.	162.00	182.00	200.00
14. Blow-off installations	7 ea.	584.00	589.00	550.00
15. Blow-off drain lines	150 l. f.	1.78	1.80	2.00
16. Cl. C. conc. pipe cradles, etc	100 c. y.	10.00	12.00	20.00
17. Cl. C conc., anchorages, forms, bolts	50 c. y.	16.50	15.00	20.00
18. Class B concrete	20 c.y.	12.00	10.00	15.00
19. Reinforcing steel	1,000 lb.	.06	.06	.05
20. Form work, complete	500 s. f.	.15	.12	.25
21. Concrete pavement (city)	100 s. y.	2.25	3.00	4.00
22. Pavmt., sh. asph. top, conc. base	50 s. y.	3.25	3.60	3.00
24. Pavmt., asph. conc. top, conc. base	50 s. y.	1.65	3.60	3.00
25. Haul and dispose excav. mat'l	100,000 sta. y.	.025	.035	.05
26. Replace sod	4,700 s. y.	.65	.60	.25

SECTION II—PIPE LINES 24-IN. AND SMALLER

LOW BIDDERS:

1. W. B. Carter, Wichita, Kan. (contract).....$27,945
2. Dobson & Robinson, Lincoln, Nebr..... 34,521
3. Asplund Constr. Co., Enid, Okla..... 39,325

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 24-in. c. i. pipe, fittings, spec	7,800 l. f.	$0.80	$1.03	$0.95
2. 20-in. c. i. pipe, fittings, spec	5,300 l. f.	.50	.82	.81
3. 14-in. c. i. pipe, fittings, spec	25,400 ft.	.45	.55	.76
4. Crossing railroads (2)	L.S.	1,247.00	1,185.00	1,190.00
5. Air release valve and housing manhole	3 ea.	162.00	156.00	135.00
6. Blow-off installations	1 ea.	478.00	452.00	500.00
7. 24-in. gate valve installation	1 ea.	557.00	570.00	625.00
8. 14-in. gate valve installation	23 ea.	192.00	220.00	215.00
9. Blow-off drain lines	20 l. f.	1.78	1.80	1.75
10. Class B conc	10 c. y.	12.00	10.00	18.00
11. Class C conc	15 c. y.	10.00	12.00	17.50
12. Reinforcing steel	1,000 lb.	.06	.06	.05
13. Form work	500 s. f.	.15	.12	.25

WATERWORKS, OREGON

OWNER: Columbia City, Oregon, J. L. Heglund, mayor; H. L. Gilbert, Portland, engineer.

PROJECT: Constructing waterworks, Columbia City, Columbia County, Oregon, including reinforced concrete reservoir, pump house, pump, cast iron pipe and fittings.

CONDITIONS: Rail, highway and water transportation available. Wages on project are: skilled, $1.50 per hr.; semi-skilled, $1.00 per hr.; and common, 62½c. per hr.

BIDS: Eight bids were received June 19, 1939, ranging from the contract low of $22,738 to $31,346. Contract approved by PWA and awarded August 11, 1939.

LOW BIDDERS:

1. Superior Constr. Co., Seattle, Wash. (contract) $22,738
2. F. J. Gregorie & Charles Prigge, Portland, Ore. 22,965
3. Eugene Ruedy, Portland, Ore..... 24,558

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cast iron pipe, 6-in	3,180 l. f.	$0.90	$0.89	$0.94
2. Cast iron pipe, 4-in	6,750 l. f.	.61	.58	.65
3. Cast iron pipe, 3-in	7,320 l. f.	.52	.49	.555
4. Gate valves, 6-in	7 ea.	32.00	34.15	33.60
5. Gate valves, 4-in	19 ea.	22.00	22.50	21.80
6. Gate valves, 3-in	14 ea.	18.00	20.00	18.40
7. Cast iron fittings	7,376 lb.	.07	.09	.08
8. Fire hydrants	20 ea.	50.00	43.75	49.50
9. Concrete anchorages	10 c. y.	10.00	10.00	12.00
10. Com. excav. and backfill	2,950 c. y.	.65	.75	.65
11. Solid rock excav	10 c. y.	6.00	1.00	2.00
12. Pavement	5 s. y.	3.00	1.50	.50
13. Service connections	100 ea.	16.00	17.25	15.00
14. Highway undercrossings	L. S.	75.00	105.00	76.00
15. Railroad undercrossings	L. S.	75.00	105.00	76.00
16. Pump unit, complete	L. S.	2,300.00	2,350.00	2,294.00
17. Reinf. conc. reservoir	L. S.	2,800.00	3,131.00	4,146.00
18. Galvanized pipe, ¾-in	4,000 lb.	.15	.10	.24

Boston, Mass.—A section of the 138" diameter Lock Joint Pressure Aqueduct.

Consider the Ultimate Cost when figuring pipe line costs.....

The purpose of a water supply line is the transportation of water for future as well as present generations.

The most economical pipe line therefore is that one which will carry the greatest quantity of water for the longest time at the lowest ultimate cost.

True over all economy is determined by certain vital characteristics, all of which are included in every Lock Joint Pipe Line.

Consider then these proven facts about Lock Joint Pipe Lines in figuring pipe line costs:

Low first cost

Low Operating Cost—Due to permanently high carrying capacity resulting from smooth, permanent, concrete surfaces — Immune to tuberculation and corrosion.

Low Maintenance cost—Due to negligible repairs and freedom from broken pipe or leaky joints.

Minimum Depreciation—Absence of deterioration in the many Lock Joint Pipe Lines now in service indicates that they may properly be regarded as permanent structures.

Lock Joint Reinforced Concrete Pressure Pipe Lines in addition to being low in first cost possess all of the essential requirements for permanently economical pipe lines.

LOCK JOINT *Reinforced Concrete* **PRESSURE PIPE**

LOCK JOINT PIPE CO. Established 1905 AMPERE, N. J.

FILTER PLANT, RESERVOIR TOLEDO, OHIO

OWNER: City of Toledo, Ohio, Division of Water, George N. Schoonmaker, city manager; Greeley and Hansen, Chicago, engineers.

PROJECT: Construction of filter plant structures and reservoir for Toledo's Lake Erie Water Project. Involves construction of substructures and superstructures for filter plant proper consisting of sedimentation basins, reaction basins, filter tanks and certain equipment. Eighty m.g.d. capacity. Reservoir to be of reinforced concrete construction, underground, with 35 million gallons capacity. Plant located just outside northeastern city limits, but Toledo code and ordinances prevail.

CONDITIONS: Contractor to furnish all materials and complete work by December 31, 1940. Rail, highway and water transportation facilities available. Wages stipulated are: skilled, $1.50 to $1.65 per hr.; semi-skilled, $1.00 to $1.25; and common labor, 75c. to $1.00 per hr. Bids were taken on two capacities, 64 m.g.d. and 80 m.g.d. Awarded on basis of latter. Prices on piping and equipment, filter floor and electrical work on which bids were opened at the same time contained too many lump sum items for publication.

BIDS: Six bids were opened December 6, 1939 for the structures, ranging from the contract low of $999,857 to $1,279,933. Sixteen bids were opened on the same day for the reservoir construction, ranging from $583,861, the contract low, to $758,578. In the bidding, it was stipulated that a deduction of $12,000 was to be made if the low bidder received contracts for structures and reservoir. As this was the case, deduction was made, but it does not appear in the following tabulation of bids.

DIVISION L—STRUCTURES, FILTER PLANT

LOW BIDDERS:

1. Jerome A. Utley, Detroit, Mich. (contract) . $999,857
2. A. Bentley & Son, Toledo, Ohio..... 1,015,344
3. Bryant & Detwiler, Detroit, Mich..... 1,021,508

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	83,000 c. y.	$0.30	$0.30	$0.50
2. Rock excavation	10 c. y.	20.00	1.00	10.00
3. Selected fill mat'l	200 c. y.	3.00	2.50	2.00
4. Backfill and embankments	65,000 c. y.	.32	.253	.50
5. Fill over structures	7,600 c. y.	.45	.253	.70
6. Dispose surplus excav. mat'l	8,000 c. y.	.40	.405	.60
7. Wood sheeting, left in place	10 M bm.	50.00	25.00	20.00
8. Steel sheeting, left in place	10,000 lb.	.03	.01	.01
9. Wood sheet piling	20 M bm.	150.00	30.00	50.00
10. Steel sheet piling	20,000 lb.	.05	.04	.04
11. Timber piles	25,000 l. f.	.46	.425	.50
12. Pile loading tests	8 ea.	125.00	102.00	100.00
13. Plank and timber found'n	20 M bm.	50.00	30.00	30.00
14. Reinforcing steel bars	4,000,000 lb.	.038	.036	.04
15. Reinforcing mesh	5,000 lb.	.10	.06	.09
16. A-1 conc., walls, beams, slabs	14,000 c. y.	17.25	20.60	17.75
17. A-2 conc., floors and footing	8,000 c. y.	9.30	11.60	12.90
18. Cl. B concrete	900 c. y.	11.90	10.00	12.00
19. Precast concrete	10 c. y.	50.00	30.00	10.00
20. Rubbed finish	150,000 s. f.	.10	.058	.07
21. Concrete baffles	20 ea.	100.00	92.50	90.00
22. Wash water troughs	360 ea.	80.00	36.50	55.00
23. Sheet copper expan. joints	800 l. f.	.80	1.00	2.00
24. ½-in. sheet mastic. expan. joints	3,000 s. f.	.20	.26	.20
25. Painted asphalt joints	600 s. y.	.30	.50	.50
26. Poured asphalt joints	250 gallon	1.00	.80	3.00
27. Common brick masonry	20 c. y.	30.00	23.00	22.00
28. Structural steel	900,000 lb.	.055	.044	.05
29. Misc. steel and iron	16,000 lb.	.11	.12	.12
30. Iron castings	30,000 lb.	.10	.07	.08
31. Floor grating	200 s. f.	2.00	1.80	1.80
32. Vitr. tile underdrains	2,900 l. f.	.22	.30	.20
33. Surface drains	24 ea.	2.00	1.00	2.00
34. Bronze, brass and copper	200 lb.	1.00	.75	.50
35. Overflow drain piping	L.S.	3,700.00	2,880.00	3,100.00
36. Wood baffles, reaction basin	L.S.	5,000.00	3,480.00	2,150.00
37. Wood baffles, carbonation cham	L.S.	3,400.00	3,000.00	1,640.00
38. Stirring mechanisms	L.S.	28,500.00	30,000.00	26,000.00
39. Sludge collecting mechanisms	L.S.	77,000.00	81,500.00	82,000.00
40. Heating equipment, piping	L.S.	8,000.00	9,000.00	8,400.00
41. Plumbing and fixtures	L.S.	4,000.00	3,480.00	4,200.00
42. Sump pumps	L.S.	1,300.00	1,240.00	1,400.00
43. Superstructures	L.S.	179,400.00	176,200.00	155,000.00
44. Field painting	L.S.	7,200.00	12,000.00	5,500.00
45. Field office building	L.S.	9,000.00	10,000.00	8,500.00
46. 10-in. sanitary sewer	5,245 l. f.	2.80	2.20	2.00
47. Standard manholes	180 l. f.	15.00	15.00	12.00
48. 6-in. water main	375 l. f.	3.00	2.65	2.00
49. Valves and connection	L.S.	200.00	198.00	350.00

DIVISION P—RESERVOIR

LOW BIDDERS:

1. Jerome A. Utley, Detroit, Mich. (contract) . . $583,861
2. Lombardo Brothers, Toledo, Ohio..... 600,886
3. A. Bentley & Son, Toledo, Ohio..... 601,489

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	265,000 c. y.	$0.27	$0.23	$0.284
2. Rock excavation	10 c. y.	20.00	1.00	1.00
3. Selected fill material	200 c. y.	3.00	3.00	2.50
4. Backfill and embankments	115,000 c. y.	.24	.10	.253
5. Fill over structures	29,000 c. y.	.30	.50	.253
6. Dispose surplus material	23,000 c. y.	.40	.10	.25
7. Wood sheeting, left in place	10 M bm.	50.00	10.00	25.00
8. Steel sheeting, left in place	10,000 lb.	.03	.01	.01
9. Wood sheet piling	20 M bm.	150.00	10.00	30.00
10. Steel sheet piling	20,000 lb.	.05	.01	.04
11. Timber piles	25,000 l. f.	.46	.50	.435
12. Pile loading tests	8 ea.	125.00	100.00	102.00
13. Plank and timber found'n	20 M bm.	50.00	10.00	30.00
14 Reinforcing steel	5,000,000 lb.	.037	.042	.0373
15. Reinforcing mesh	5,000 lb.	.10	.10	.06
16. Cl. A-1 conc., walls, beams, slabs	10,500 c. y.	15.35	17.00	16.25
17. Cl. A-2 conc., floors and footings	8,000 c. y.	9.00	9.00	10.30
18. Class B concrete	1,250 c. y.	10.44	8.00	10.20
19. Precast concrete	10 c. y.	50.00	10.00	30.00
20. Concrete baffles	34 ea.	110.00	200.00	107.00
21. Sheet copper expan. joints	60 l. f.	.80	1.00	1.00
22. Misc. steel and iron	2,000 lb.	.11	.15	.14
23. Iron castings	6,000 lb.	.10	.15	.05
24. Vitr. tile underdrains	6,600 l. f.	.22	.40	.30
25. Surface drains	63 ea.	2.00	2.00	1.00
26. Sluice gates and flap valves	L.S.	9,300.00	15,000.00	10,300.00

INTAKE CONDUIT AND CRIB TOLEDO, OHIO

OWNER: City of Toledo, W. F. Harris, Director of Public Service, Toledo, Ohio. Greeley & Hansen, Chicago, engineers.

PROJECT: Constructing Lake Erie water intake conduit and crib, Division F, consisting of 15,500 ft. of 9-ft. diameter reinforced concrete pipe, of which approximately 11,540 ft. is to be in subaqueous tunnel in lake.

CONDITIONS: Contractor to furnish all materials and complete project in 300 days. Rail, highway and water transportation available. Wages on project are: skilled, $1.62 per hr.; semi-skilled, $1.00 per hr.; and common, 75c. per hr.

BIDS: Bids were asked July 12, 1939, on four types of conduit, earth tunnel, rock tunnel, steel pipe, and reinforced concrete pipe. Three diameters were considered, 8 ft. 8 in.; 8 ft. 2 in.; and 7 ft. 8 in., on the rock tunnel; and 9 ft., 8½ ft. and 8 ft., on the other types. No bids received on earth tunnel type construction. One bid on rock tunnel, of $105.00 per lin. ft. for 8 ft. 8 in. dia.; $104.50 per ft. for 8½ ft. dia.; and $104.00 for 7 ft. 8 in. dia. Three bids were received on steel pipe construction, ranging from $1,905,472 to $1,941,852, on the 9-ft. pipe. Two bids received on reinforced concrete pipe structure, $1,847,341, the contract low (awarded July 27), and $1,951,801.

LOW BIDDERS:

1. Merritt, Chapman & Scott, New York, N. Y. (concrete) $1,847,341
2. C. B. Moon Co., Cleveland, Ohio (steel).... 1,905,472
3. Great Lakes Dredge & Dock Co., Cleveland, Ohio (steel) 1,916,500

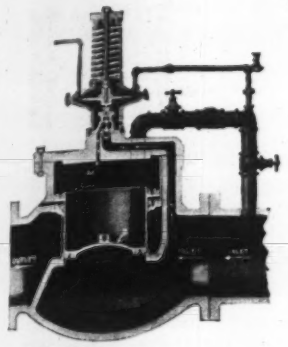
GENERAL CONSTRUCTION

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	1,440 c. y.	$3.75	$1.00	$2.00
2. Reinforcing steel	300,000 lb.	.05	.06	.06
3. Reinforcing mesh	800 lb.	.12	.10	.10
4. Class A-1 concrete	3,550 c. y.	18.36	29.00	30.00
5. Class A-2 concrete	1,460 c. y.	11.00	29.00	12.00
6. Class B concrete	100 c. y.	19.00	29.00	13.50

GOLDEN-ANDERSON VALVE ECONOMY...

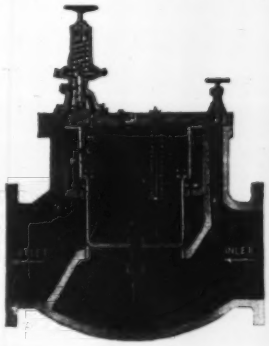
. . (A Performance Quality Apparent In This Cross Section of The G-A Line) . . .

ANSWERS THE PROBLEM OF REASONABLE FIRST COST VALVE INVESTMENTS THAT GIVE YEARS OF MAINTENANCE FREE SERVICE!



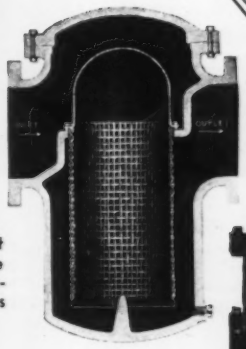
ALTITUDE CONTROL VALVE

Maintains water levels within 3 to 12 in. variation. Differential control permits delayed valve opening for any depth tank. . . . valve acts additionally as a check valve. May be fitted with electric units for pump control or remote operation. Single or double acting service. Sizes 2 to 36 in.



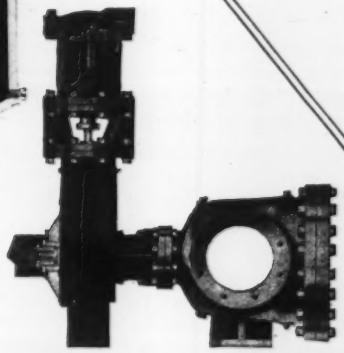
WATER REDUCING VALVE

Assures constant terminal-delivery pressure under varying volume demands. Adjusts quickly to suit conditions without shock or jar. Sensitive control. No metal contacts assure economic upkeep. Sizes ½ to 36 in.



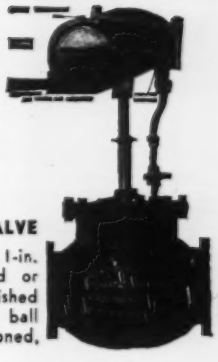
WATER STRAINER

Furnished with large capacity basket of suitable mesh to meet all service demands and assure minimum pressure drop. Readily cleaned. Sizes 3 to 36 in.



CONE THRU-FLOW VALVE

Furnished for any automatic operating service as altitude; reducing; check; relief; and emergency shut-off valve. Also supplied manually operated only in lieu of gate valves. Always full pipe line opening without pressure drop. Sizes 4" to 72"



CONTROLLING FLOAT VALVE

Maintains water level within 1-in. variation. Suitable for closed or open tanks, etc. Also furnished without self contained float ball chamber. Air and water cushioned.

On waterlines and storage tanks throughout the country, Golden-Anderson Valves have *proved* their inbuilt quality and economic value by serving year after year with little or no maintenance cost . . . and this over and above the fact that their initial purchase cost was very reasonable. This indicates that G-A valves will cost you less in the long run . . . and when coupled with G-A's manufactured quality, width of application and variety of valve types, one easily sees why Golden-Anderson products offer "more years of service per dollar expended."

There are definite savings to be had with a G-A valve installation. Have one of our engineers call on you at your convenience—his recommendations for increased valve economies are yours with no obligation.

GOLDEN-ANDERSON
VALVE SPECIALTY COMPANY

1300 FULTON BLDG.

PITTSBURGH PENNSYLVANIA

Cable Address—GAVSCO

7. Precast concrete	5 c. y.	38.00	29.00	50.00
8. Rubbed finish	100 s. f.	.19	.25	1.50
9. Structural steel	160,000 lb.	.11	.08	.09
10. Misc. steel and iron	5,500 lb.	.30	.10	.12
11. Iron castings	12,000 lb.	.12	.15	.15
12. Superstructure	L.S.	54,911.00	65,196.00	56,000.00
13. Heating equipment	L.S.	3,729.00	3,000.00	2,700.00
14. Elec. work and storage battery	L.S.	5,284.00	3,300.00	3,200.00
15. Marine light equipment	L.S.	1,028.06	1,700.00	1,500.00
16. Gasoline engine generator	L.S.	1,016.00	1,700.00	1,700.00
17. Refrigerating equipment	L.S.	563.00	600.00	600.00
18. Sanitary waste containers	L.S.	1,020.00	2,000.00	1,300.00
19. Boat derrick and hoist	L.S.	2,286.00	2,500.00	3,000.00
20. Field painting	L.S.	2,120.00	2,000.00	3,500.00
21. Cofferdam, intake crib	L.S.	102,139.00	244,000.00	130,000.00
22. Field office buildings (2)	L.S.	16,743.00	18,000.00	14,000.00
23. Conc. bridge, Yondota Rd.	L.S.	11,704.00	10,080.00	12,000.00
24. Roadbed construction	30,000 c. y.	.85	.90	.50
25. Stone fill, roadbed	5,000 c. y.	1.88	2.00	1.50
26. Crushed stone or slag, pavmt	3,000 c. y.	2.58	5.50	3.00
27. Seal coat, pavement	11,300 s. y.	.40	.35	.16
28. Lumber and timber	7 M.b.m.	195.00	150.00	200.00
29. Timber piles	600 l. f.	.90	1.25	2.00
30. Steel piles	18,000 lb.	.05	.06	.06
31. Additional rock excav.	10 c. y.	5.00	10.00	20.00
32. Misc. brick masonry	10 c. y.	25.00	50.00	50.00
33. Selected fill material	100 c. y.	2.10	3.00	1.50
34. Wood sheeting, left in place	1 M.b.m.	45.00	200.00	50.00
35. Steel sheeting, left in place	500 lb.	.02	.10	.03
36. Wood sheet piling	1 M.b.m.	100.00	200.00	200.00
37. Steel sheet piling	500 lb.	.05	.10	.05
38. Rock riprap	300 ton	5.00	20.00	6.00
39. Additional earth excav.	360 c. y.	3.75	1.00	2.00
40. Additional reinf. steel	8,700 lb.	.05	.06	.06
41. Additional Cl. A-1 concrete	213 c. y.	18.36	29.00	30.00

CONDUIT

Reinforced Concrete Pipe — Alternate C

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Subaqueous reinf. conc. pipe and circ. conc. intake conduit in earth tunnel, 9 ft. dia.	15,443 l. f.	$94.05*	$86.57	.....
2. Same, 8½ ft. dia.	15,443 l. f.	93.20	83.24	.....
3. Same, 8 ft. dia.	15,443 l. f.	92.45	80.56	.....
4. Surge well for earth tunnel at El. 535	L.S.	10,000.00	3,000.00	.....

Steel Pipe — Alternate S

1. Subaqueous steel pipe and circ. conc. intake conduit in earth tunnel, 9 ft. dia.	15,443 l. f.	$100.17	$83.57	$94.92
2. Same, 8½ ft. dia.	15,443 l. f.	98.60	80.24	91.77
3. Same, 8 ft. dia.	15,443 l. f.	97.00	77.56	88.62
4. Surge well for earth tunnel at El. 535	L.S.	10,000.00	3,000.00	10,000.00

** Contract awarded for 9 ft. reinf. concrete pipe.*

WATER SYSTEM, WASHINGTON

OWNER: City of Sunnyside, Washington. G. D. Hall, Yakima, Washington, engineer.

PROJECT: Constructing domestic water system in Sunnyside, Yakima County, Wash. Involves two 750,000 gallon covered concrete reservoirs; laying 7,500 ft. of 6 to 12-in. pipe; and drilling two 210-ft. wells.

CONDITIONS: Reservoirs to be completed in six months. Other work to be finished in 90 days. Rail and highway facilities for transportation available. Contractor to furnish all material. Concrete pouring halted by winter weather, to be resumed in spring. Wage rates on project are: skilled, $1.50 per hr.; semi-skilled, $1.25; and common, 70c. per hr.

BIDS: Eleven bids were received for reservoir construction (Schedule I) October 27, 1939. They ranged from contract low of $39,833 to $58,380. Nine bids received October 27, for pipe laying (Schedule II) ranging from contract low of $19,100 to $25,664. Four bids opened same date for drilling wells (Schedule III), ranging from $4,825 to 8,839.

SCHEDULE I—RESERVOIRS

LOW BIDDERS:

1. Superior Constr. Co., Seattle, Wash. (contract) $39,833
2. L. B. James, Portland, Ore. 42,463
3. H. J. Adler, Yakima, Wash. 43,520

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Uncl. excav. and backfill	2,400 c. y.	$1.90	$1.70	$1.50
2. Gravel backfill	150 c. y.	1.50	2.20	2.00
3. Borrow, to 1 mi. haul	1,200 c. y.	.75	.42	.30
4. Borrow, overhaul	1,200 y. mi.	.08	.105	.10
5. Concrete	1,260 c. y.	16.90	17.80	19.50
6. Reinforcing steel	140,000 lb.	.06	.06	.05
7. Copper diaphragms	2,200 l. f.	.40	1.10	.90
8. Str. steel, incl. ftgs.	8,000 lb.	.22	.12	.15
9. 4-in. S and Y flanged valves	2 ea.	27.00	20.00	25.00
10. 16-in. S and Y flanged valves	2 ea.	210.00	142.80	200.00
11. 16-in. N.R.S. H.E. valves	1 ea.	195.00	148.00	200.00
12. 4-in. Class 100 c.i. or std. wrt. steel	20 l. f.	.60	2.00	1.00
13. 12-in. Class 100 c.i. pipe, drain	10 l. f.	3.95	3.00	3.00
14. 16-in. Class 100 c.i. or steel pipe	480 l. f.	4.25	3.67	4.00
15. 12-in. concrete pipe	250 l. f.	1.30	.55	.80
16. 4-in. Dresser or Dayton couplings	1 ea.	2.50	4.00	10.00
17. 16-in. Dresser or Dayton couplings	4 ea.	15.00	13.40	40.00
18. Fence	880 l. f.	.75	.75	1.50
19. Rubble masonry (dry wall)	10 c. y.	7.00	5.50	8.00

SCHEDULE II—PIPE LAYING

LOW BIDDERS:

1. J. M. DeBlasio, Yakima, Wash. (contract) $19,100
2. Ernest Stettler, Logan, Utah 20,240
3. Superior Constr. Co., Seattle, Wash. 20,878

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 6-in. Cl. 150 pipe	1,500 l. f.	$1.20	$1.24	$1.28
2. 8-in. Cl. 150 pipe	2,800 l. f.	1.80	1.72	1.79
3. 10-in. Cl. 150 pipe	700 l. f.	2.30	2.22	2.65
4. 12-in. Cl. 100 pipe	2,400 l. f.	2.60	2.61	2.70
5. 4-in. Cl. B valves and boxes	2 ea.	20.00	20.00	20.00
6. 6-in. Cl. B valves and boxes	14 ea.	30.00	30.00	28.00
7. 8-in. Cl. B valves and boxes	24 ea.	40.00	40.00	40.00
8. 10-in. Cl. B valves and boxes	4 ea.	60.00	62.50	70.00
9. 12-in. Cl. B valves and boxes	6 ea.	80.00	79.50	80.00
10. Extra excavation	150 c. y.	1.00	1.50	1.50
11. Rock excavation	300 c. y.	2.00	4.00	2.50
12. 12-in. concrete pipe	1,000 l. f.	.60	.85	.98
13. 10-in. concrete pipe	1,600 l. f.	.50	.75	.88

SCHEDULE III—DRILLING WELLS

LOW BIDDERS:

1. A. A. Durand & Son, Walla Walla, Wash. (contract) $4,825
2. J. W. Ludwig, Granger, Wash. 5,489
3. N. C. Jannsen Drilling Co., Seattle, Wash. 7,236

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Drilling to accomodate 15-in. casing	210 l. f.	$6.00	$8.00	$7.50
2. Drilling to accomodate 12-in. casing	210 l. f.	5.00	6.00	6.75
3. Under-reaming (alt.)	100 l. f.	3.00	5.00	24.00
4. Gravel (alt.)	20 c. y.	4.00	5.00	2.00
5. Perforating	200 l. f.	1.00	1.00	.75
6. Furnish and inst. 15-in. casing	210 l. f.	4.50	3.65	3.15
7. Furnish and inst. 12-in. casing	210 l. f.	3.00	3.25	2.82
8. Well tests	2 ea.	180.00	150.00	200.00

WATERWORKS, KANSAS

OWNER: City of Grinnell, Kansas. Paulette & Wilson, Salina and Topeka, Kans., engineers.

PROJECT: Construction of waterworks system, except pump, at Grinnell. Bids were taken on lump sum basis, and the unit prices tabulated below are to apply in the event of under-runs from the contract.

BIDS: Nine bids were received March 17, 1939, ranging from the contract low of $23,970 to $28,168. Contract awarded April 28. Engineer's estimate, $26,918.

LOW BIDDERS:

1. C. L. Burt, Hutchinson, Kans. (contract) $23,970
2. W. B. Carter, Wichita, Kans. 24,675
3. P. P. Young, St. Joseph, Mo. 24,995

Item	Unit	Unit Prices (1)	(2)	(3)
1. Excav.	c. y.	$0.55	$0.90	$0.60
2. Trench, 4 to 6 ft. deep	l. f.	.10	.09	.08
3. 6-in. B&S C.I. pipe	l. f.	1.09	1.05	1.15
4. 4-in. B&S C.I. pipe	l. f.	.75	.75	.84
5. 2-in. B&S C.I. pipe	l. f.	.35	.40	.46
6. C. I. fittings, B&S	ton	154.00	150.00	160.00
7. 6-in. gate valves	ea.	26.00	25.00	26.00
8. 4-in. gate valves	ea.	16.60	15.00	17.00
9. 2-in. gate valves	ea.	10.25	10.00	10.00
10. 4-in. fire hydrants	ea.	55.00	58.00	55.00
11. C. I. valve boxes	ea.	5.50	4.00	5.00
12. ¾-in. copper pipe	l. f.	.33	.30	.30
13. 1-in. copper pipe	l. f.	.44	.40	.36
14. ¾-in. water meter	ea.	9.35	7.50	8.00
15. 1-in. water meter	ea.	20.90	16.50	17.00
16. ¾-in. meter jumper	ea.	2.00	1.00	1.50
17. V. C. meter boxes	ea.	4.60	6.00	8.00
18. ¾-in. corporation cocks	ea.	2.65	3.50	6.00
19. 1 in. corporation cocks	ea.	4.00	6.00	7.00
20. Cl. 2 conc.	c. y.	15.40	15.00	18.00
21. Reinf.	lb.	.06	.06	.05
22. Conc. sidewalk	s. f.	.30	.25	.50

ENLARGING RESERVOIR MASSACHUSETTS

OWNER: Metropolitan District Water Supply Commission, Commonwealth of Massachusetts, Boston. Karl R. Kennison, chief engineer.

PROJECT: Construction of two additional storage basins adjacent to and connecting with present Fells Reservoir, and appurtenant work necessary to increase storage capacity of existing reservoir. Work located in town of Stoneham and cities of Malden and Melrose, Mass.

CONDITIONS: Contractor to furnish all materials except 60-in. cast iron pipe, metalwork, and salvaged 16-in. cast iron drain pipe. Supply of water from reservoir must not be interrupted during construction. Roads to be provided for access to site of work. Work must be completed by June 15, 1940. Wage rates on project are: skilled, $1.25 to $1.62½ per hr.; semi-skilled, 75c. to $1.15; and common labor, 65c. per hr.

BIDS. Eleven bids were received December 21, 1939, ranging from the contract low of $132,395 to $197,185.

LOW BIDDERS:

1. Middlesex Constr. Co., Framingham, Mass. (contract) $132,395
2. J. F. Fitzgerald Constr. Co., Boston, Mass... 133,613
3. J. J. Callahan, West Roxbury, Mass..... 146,240

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clearing	20 ac.	$480.00	$200.00	$100.00
2. Grubbing	10 ac.	90.00	300.00	100.00
3. Stripping	20,000 c.y.	.30	.40	.40
4. Earth excavation	7,000 c.y.	1.00	.50	.50
5. Rock excav., blasting	2,500 c.y.	2.40	2.00	4.00
6. Rock excav., no blasting	300 c.y.	12.00	7.00	8.00
7. Rolled imperv. embankmt.	40,000 c.y.	.40	.50	.42
8. Consol. pervious embankmt.	15,000 c.y.	.40	.31	.65
9. Soil dressing	1,500 c.y.	.80	.60	1.00
10. Seeding and grassing	2 ac.	150.00	400.00	160.00
11. Gravel surfacing, roads	2,500 c.y.	.85	.75	1.00
12. Cr. stone, screened grav	2,000 c.y.	1.90	3.50	1.75
13. Paving	60 c.y.	4.00	4.00	5.00
14. Riprap	3,500 c.y.	2.25	2.40	5.00
15. Cobble gutters	80 c.y.	4.00	5.00	2.50
16. Miscellaneous concrete	1,200 c.y.	6.00	7.00	8.50
17. Reinforced concrete	350 c.y.	12.00	13.20	13.00
18. Portland cement	6,000 bbl.	2.65	2.60	2.65
19. Reinforcing steel	50,000 lb.	.045	.04	.05
20. Misc. iron and steel	5,000 lb.	.10	.12	.15
21. Misc. non-ferrous metals	2,000 lb.	1.25	.45	1.10
22. C. I. pipe and fittings	60,000 lb.	.055	.05	.06
23. Misc. cast iron	40,000 lb.	.075	.07	.08
24. Galvanising	3,000 lb.	.05	.03	.05
25. Prepare rock surfaces	2,000 s.y.	.30	.80	.10
26. Drill holes, rock and masonry	4,000 l.f.	.35	.50	.60
27. Placing grout	600 c.y.	5.60	8.00	4.00
28 Sand for grout	300 ton	1.50	2.00	1.00
29. Reservoir lining	500 s.y.	2.00	1.90	2.50
30. Stone masonry	15 c.y.	65.00	80.00	70.00
31. Boulder guard rail	1,000 bldrs.	1.00	1.00	1.00
32. Permanent fencing, type C	6,000 l.f.	1.40	1.40	1.60
33. Misc. lumber	5 M bm	50.00	80.00	75.00
34. Lay 60-in. c.i. pipe	200 l.f.	10.00	5.00	5.60
35. Setting metal work	15,000 lb.	.03	.03	.02
36. Relay 16-in c.i dr. pipe	700 l.f.	2.50	2.00	.75
37. Valve and blow-off chambers	L.S.	150.00	300.00	600.00
38. Alter existing gate house	L.S.	150.00	558.00	2,300.00
39. Clean up	L.S.	500.00	1,000.00	500.00

WATER SYSTEM, MONTANA

OWNER: City of St. Ignatius, Mont.; R. J. Hale, Missoula, Mont., engineer.

PROJECT: Constructing gravity type water system to take water from Mission Creek, 3 miles east of St. Ignatius. Includes intake diversion dam, pipes, fire hydrants, service connections, and storage tank.

CONDITIONS: Contractor to furnish all materials and complete job in 120 "weather-working" days. Severe winter weather may cause shut-down until spring. Rail facilities available to within 7 miles of site of work; highway transportation to site. Wage rates are: skilled, $1.20 per hr.; semi-skilled, 82c.; and common, 65c. per hr.

BIDS: Five bids were received ranging from contract low of $23,318 to $31,331. Awarded November 6, 1939.

LOW BIDDERS:

1. Federal Pipe & Tank Co., Seattle, Wash. (contract) $23,318
2. Union Construction Co., Great Falls, Mont.... 28,253
3. F. J. Mertz, St. Ignatius, Mont..... 29,070

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 8-in. 50-ft. head wood pipe, incl. trench and backfill	5,800 l. f.	$0.795	$0.83	$0.85
2. 6-in. 50-ft. head wood pipe, incl. trench and backfill	4,000 l. f.	.615	.80	.82
3. 6-in. 100-ft. head wood pipe, incl. trench and backfill	4,700 l. f.	.63	.85	.90
4. 6-in. 200-ft. head wood pipe, incl. trench and backfill	1,250 l. f.	.68	.85	.90
5. 4-in. 200-ft. head wood pipe, incl. trench and backfill	12,500 l. f.	.543	.75	.75
6. 1-in. galv. iron pipe, trench and backfill	1,440 l. f.	.35	.45	.45
7. 8-in. gate valves, incl. box	2 ea.	60.00	49.00	50.00
8. 6-in. gate valves, incl. box	9 ea.	44.00	36.00	36.00
9. 4-in. gate valves, incl. box	11 ea.	31.00	22.00	20.00
10. 1-in. gate valves, incl. box	6 ea.	16.00	12.00	15.00
11. 4-in. fire hydrants, in place	14 ea.	92.50	80.00	85.00
12. 15-in. perf. and paved corr. iron pipe, in place	250 l. f.	4.00	5.00	6.00
13. 40,000-gal. wood stave tank, roof and foundation	L. S.	1,485.00	1,675.00	1,700.00
14. ¾-in. service connections	1 ea.	23.50	35.00	30.00
15. Float control (fixed price)	1 ea.	253.00	253.00	253.00
16. Structural excavation	225 c. y.	2.20	1.00	1.10
17. 2-in. stop and waste	3 ea.	45.00	30.00	25.00

WATER DISTRIBUTION SYSTEM TEXAS

OWNER: Travis County Water Control and Improvement District No. 1, Austin, Tex.; H. H. Dickehut, president. Trimble & Bandy, Austin, Tex., engineers.

PROJECT: Constructing water distribution system beginning at south city limit of Austin, and extending 3 miles south. Approximately 54,000 l. f. of cast iron pipe required for completion.

CONDITIONS: All materials to be furnished by contractor and project to be finished in 100 working days. Rail and highway transportation facilities available. Wage rates stipulated are: skilled, $1.00 per hr.; semi-skilled, 75c.; and common labor, 40c. per hr.

BIDS: Thirteen bids were received Dec. 12, 1939, ranging from the contract low of $57,122 to $72,070.

LOW BIDDERS:

1. J. C. Truehart, San Antonio, Tex., and T. A. Caldwell, Austin, Tex. (contract)..... $57,122
2. W. G. Cullum & Co., Dallas, Tex..... 59,203
3. Holland Page, Austin, Tex..... 60,519

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 8-in. cast iron pipe	2,350 l. f.	$1.63	$1.60	$1.70
2. 6-in. cast iron pipe	23,200 l. f.	1.16	1.15	1.20
3. 4-in. cast iron pipe	5,750 l. f.	1.00	.85	1.00
4. 3-in. cast iron pipe	6,300 l. f.	.70	.75	.40
5. 2-in. cast iron pipe	16,369 l. f.	.40	.45	.40
6. 8-in. gate valves	2 ea.	40.00	40.00	60.00
7. 6-in. gate valves	7 ea.	27.00	30.00	40.00
8. 4-in. gate valves	4 ea.	16.50	22.00	25.00
9. 3-in. gate valves	4 ea.	13.00	19.00	20.00
10. 2-in. gate valves	14 ea.	7.00	14.00	16.00
11. 6-in. check valves	2 ea.	27.50	65.00	40.00
12. Fire hydrants	16 ea.	60.00	55.00	75.00
13. Pump house	L. S.	500.00	725.00	500.00
14. 100-gpm. centri. pump	2 ea.	325.00	350.00	750.00
15. ⅝-in. copper tubing	7,500 l. f.	.39	.40	.45
16. ¾-in. meters and boxes	180 ea.	12.00	14.00	16.50
17 1-in. meters and boxes	15 ea.	20.00	25.00	30.00
18. 1½-in. meters and boxes	10 ea.	33.00	40.00	45.00
19 2-in. meters and boxes	1 ea.	53.00	60.00	80.00
20. Cast iron fittings	10 ton	145.00	150.00	150.00
21. State highway crossings	2 ea.	100.00	100.00	250.00
22. ⅝-in. meter	1 ea.	14.00	20.00	20.00
23. Solid rock excav.	250 c. y.	2.50	2.50	4.75

SEWERAGE SYSTEM, MINNESOTA

OWNER: City of Wayzata, Minn.; Druar & Milinowski, St. Paul, engineers.

PROJECT: Constructing sewerage system, including sewers (Part I); and treatment plant and lift station (Part II).

CONDITIONS: Project must be completed by Dec. 25, 1939. Contractor to furnish materials. Rail and highway transportation facilities available. Wage rates for the job are: skilled, $1.37½ per hr.; semi-skilled, $1.10; and common (building labor), 85c. per hr.

BIDS: Five bids were received on Part I, ranging from the contract bid, $106,233, to the high of $146,114. On Part II, bids range from $83,442 to $98,009 for the five contractors bidding. Bids opened May 6, 1939.

PART I — SEWERS

LOW BIDDERS:

1. Mariani & Orfei, St. Paul, Minn. (contract) $106,233
2. Theo. Jensen Co., St. Cloud, Minn 111,877
3. Okes Constr. Co., St. Paul, Minn 133,290

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Manholes	143 ea.	$70.00	$90.00	$90.00
2. 6" Vit. Pipe Chimneys	1,800 l. f.	.50	.50	.60
3. 6" Serv. conn. 3'– 9' deep	2,000 l. f.	.70	1.00	.80
4. 6" Serv. conn. 7'– 9' deep	4,000 l. f.	.75	1.05	1.00
5. 6" Serv. conn. 9'–11' deep	1,500 l. f.	1.00	1.25	1.10
6. 6" Serv. conn. 11'–13' deep	500 l. f.	1.15	1.50	1.50
7. 8" Vit. pipe, ld. 0'– 5' deep	300 l. f.	.75	.90	1.00
8. 8" Vit. pipe, ld. 5'– 7' deep	3,400 l. f.	.90	.95	1.00
9. 8" Vit. pipe, ld. 7'– 9' deep	9,500 l. f.	1.05	1.00	1.15
10. 8" Vit. pipe, ld. 9'–11' deep	13,000 l. f.	1.25	1.05	1.30
11. 8" Vit. pipe, ld. 11'–13' deep	6,200 l. f.	1.55	1.10	1.70
12. 8" Vit. pipe, ld. 13'–15' deep	2,200 l. f.	1.95	1.20	2.00
13. 8" Vit. pipe, ld. 15'–17' deep	1,300 l. f.	2.25	1.75	2.20
14. 8" Vit. pipe, ld. 17'–19' deep	600 l. f.	3.00	2.50	3.00
15. 8" Vit. pipe, ld. 19'–21' deep	300 l. f.	3.10	3.00	4.00
16. 8" Vit. pipe, ld. 21'–23' deep	300 l. f.	3.65	3.50	4.40
17. 8" Vit. pipe, ld. 23'–25' deep	500 l. f.	4.05	4.00	4.60
18. 8" Vit. pipe, ld. 25'–27' deep	100 l. f.	4.05	5.00	4.65
19. 8" Vit. pipe, ld. 27'–29' deep	100 l. f.	4.05	6.00	6.00
20. 8" Vit. pipe, ld. 29'–31' deep	100 l. f.	4.05	7.00	7.15
21. 8" Vit. pipe, ld. 31'–33' deep	100 l. f.	5.25	8.00	7.70
22. 8" Vit. pipe, ld. 33'–35' deep	100 l. f.	5.25	9.00	9.30
23. 8" Vit. pipe, ld. 35'–37' deep	100 l. f.	5.25	10.00	10.85
24. 10" Vit. pipe, ld. 7'– 9' deep	100 l. f.	1.15	1.15	1.10
25. 10" Vit. pipe, ld. 9'–11' deep	200 l. f.	1.45	1.20	1.20
26. 10" Vit. pipe, ld. 11'–13' deep	1,000 l. f.	1.75	1.25	1.90
27. 10" Vit. pipe, ld. 13'–15' deep	1,300 l. f.	2.25	1.55	2.00
28. 10" Vit. pipe, ld. 15'–17' deep	500 l. f.	3.05	1.90	2.30
29. 10" Vit. pipe, ld. 17'–19' deep	250 l. f.	3.25	2.60	3.20
30. 10" Vit. pipe, ld. 19'–21' deep	30 l. f.	3.25	3.10	4.60
31. 10" Vit. pipe, ld. 21'–23' deep	10 l. f.	3.75	3.60	5.00
32. 10" V t. p pe, ld. 23'–25' deep	10 l. f.	4.00	4.00	6.00
33. 10" V t. p pe, ld. 25'–27' deep	10 l. f.	4.25	5.00	7.00
34. 10" V t. p pe, ld. 27'–29' deep	10 l. f.	5.25	6.00	8.00
35. 10" V t. pipe, ld. 29'–31' deep	10 l. f.	5.25	7.00	9.00
36. 10" Vit. pipe, ld. 31'–33' deep	10 l. f.	6.25	8.00	10.00
37. 10" Vit. pipe, ld. 33'–35' deep	10 l. f.	6.25	9.00	12.00
38. 10" Vit. pipe, ld. 35'–37' deep	20 l. f.	7.25	10.00	14.00
39. 10" Vit. pipe, ld. 37'–39' deep	80 l. f.	7.25	12.00	16.00
40. 10" Vit. pipe, ld. 39'–41' deep	50 l. f.	7.25	15.00	18.00
41. 12" Vit. pipe, ld. 9'–11' deep	100 l. f.	1.45	1.30	1.50
42. 12" Vit. pipe, ld. 11'–13' deep	100 l. f.	1.55	1.35	2.00
43. 12" Vit. pipe, ld. 13'–15' deep	500 l. f.	1.85	1.65	2.25
44. 12" Vit. pipe, ld. 15'–17' deep	600 l. f.	2.15	2.00	3.00
45. 12" Vit. pipe, ld. 17'–19' deep	200 l. f.	2.75	2.70	3.50
46. 12" Vit. pipe, ld. 19'–21' deep	100 l. f.	2.95	3.20	4.80
47. 12" Vit. pipe, ld. 21'–23' deep	100 l. f.	3.25	3.80	5.50
48. 6" ex. hvy. C.I. soil pipe	200 l. f.	.90	1.00	1.50
49. 8" ex. hvy. C.I. soil pipe	1,000 l. f.	1.55	1.50	1.60
50. 10" ex. hvy. C.I. soil pipe	100 l. f.	2.00	2.50	3.00
51. 12" ex. hvy. C.I. soil pipe	150 l. f.	2.50	3.25	3.50
52. Bitum. joints, 6 in	3,000 l. f.	.05	.08	.20
53. Bitum. joints, 8 in	15,000 l. f.	.06	.10	.25
54. Bitum. joints, 10 in	3,000 l. f.	.07	.12	.28
55. Bitum. joints, 12 in	1,700 l. f.	.08	.15	.30
56. 5" C.I.P. laid 3'– 5' deep	100 l. f.	1.70	1.50	1.25
57. 5" C.I.P. laid 5'– 7' deep	600 l. f.	1.70	1.85	1.60
58. 5" C.I.P. laid 7'– 9' deep	700 l. f.	1.90	2.00	2.00
59. 5" C.I.P. laid 9'–11' deep	150 l. f.	1.90	2.20	2.10
60. 4" C.I.P. laid	900 l. f.	1.35	1.40	1 25
61. C.I. spec. in place	5,000 lb.	.09	.08	.28
62. 4" gate val., box; inst	1 ea.	30.00	32.00	50.00
63. Hydrant, installed	1 ea.	85.00	100.00	100.00
64. 6" x 6" Vit. Wyes; placed	5 ea.	1.00	1.00	1.50
65. 8" x 6" Vit. Wyes; placed	700 ea.	1.45	1.10	1.70
66. 10" x 6" Vit. Wyes; placed	40 ea.	2.00	1.60	2.50
67. 12" x 6" Vit. Wyes; placed	20 ea.	2.50	2.00	3.00
68. Tight sheeting	350 M s.f.	15.00	30.00	35.00
69. Sawed lumber	100 M s.f.bm.	30.00	40.00	40.00
70. Sand or gravel lining	200 c. y.	2.25	3.50	3.50
71. Conc. (1:2M:5)	30 c. y.	15.00	23.00	30.00
72. Remov. conc. pavmt	300 s. y.	1.50	.50	1.00
73. Replace conc. pavmt	300 s. y.	3.00	3.00	3.00
74. Excav. loose rock	150 c. y.	3.00	4.50	3.00
75. Excav. solid rock	50 c. y.	5.00	10.00	5.00
76. Remov. unforeseen obstr	200 c. y.	3.00	6.00	5.00

PART II — TREATMENT PLANT AND LIFT STATIONS

LOW BIDDERS:

1. Barnett & Record Co., Minneapolis, Minn. (contract) $83,442
2. Theo. Jensen Co., St. Cloud, Minn 84,557
3. Lindh-Gustafson-Hlopfer Co., Minneapolis, Minn 97,142

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excav	1,000 c. y.	$0.40	$1.00	$0.55
2. Misc. appurten	.....	382.00	400.00	612.00
3. Digest. tank	.....	3,180.00	3,700.00	3,602.00
4. Sludge bed	.....	3,170.00	3,100.00	2,179.00
5. Chlor. chamber	.....	840.00	770.00	999.00
6. Trickl. filter	.....	10,370.00	10,600.00	13,361.00
7. Rock fill. filter	650 c. y.	2.90	3.50	3.70
8. Pump building	.....	5,750.00	6,000.00	6,627.00
9. Prim. clarifier bldg	.....	7,350.00	6,800.00	12,051.00
10. Second. clarifier bldg	.....	6,900.00	6,000.00	7,017.00
11. Dosing tanks and siphon	.....	2,260.00	2,720.00	1,231.00
12. Sand filter	.....	4,450.00	4,500.00	4,862.00
13. Gravel fltr	750 c. y.	3.00	3.50	3.80
14. Sand filling	700 c. y.	1.90	4.00	2.10
15. Lift sta. A and B	.....	10,000.00	7,950.00	7,665.00
16. Pipe, valve, fittings	.....	6,870.00	7,200.00	8,860.00
17. Htg., plumb., vent	.....	4,000.00	5,000.00	6,958.00
18. Sludge pump	.....	535.00	550.00	603.00
19. Sew, pump, ta. plt	.....	295.00	400.00	320.00
20. Sew, pump, lift sta	.....	1,445.00	1,700.00	1,792.00
21. Rot, dist., dosing siphon	.....	825.00	900.00	1,966.00
22. Clarifier mech	.....	2,365.00	2,400.00	2,573.00
23. Iron fence	1,100 l. f.	1.50	1.10	1.00
24. Chlorinator	.....	1,590.00	1,600.00	1,979.00
25. Elec. work	.....	3,350.00	2,347.00	3,500.00

SEWERS, RHODE ISLAND

OWNER: Town of West Warwick, R. I., C. H. Carson, chairman, Sewer Commission. Jenks & Ballou, Providence, R. I., engineers.

PROJECT: Constructing about 5 miles of lateral and trunk sewers in Crompton and Arctic Districts, Contract 9, in the town of West Warwick.

CONDITIONS: Contractor to furnish all materials and finish job in 200 days. Rail and highway transportation facilities available. Wage rates on the project are: skilled, $1.00 to $1.57½ per hr.; semi-skilled, 80c. to $1.00 per hr.; and common labor, 50 to 80c. per hr.

BIDS: Bids were asked September 22, 1939 on job, with alternate of concrete pipe or vitrified tile for the 15-in. sewer and fittings. Eleven bids were received, ranging from the low of $115,749 to $188,205. Contract was awarded on basis of concrete pipe to low bidder.

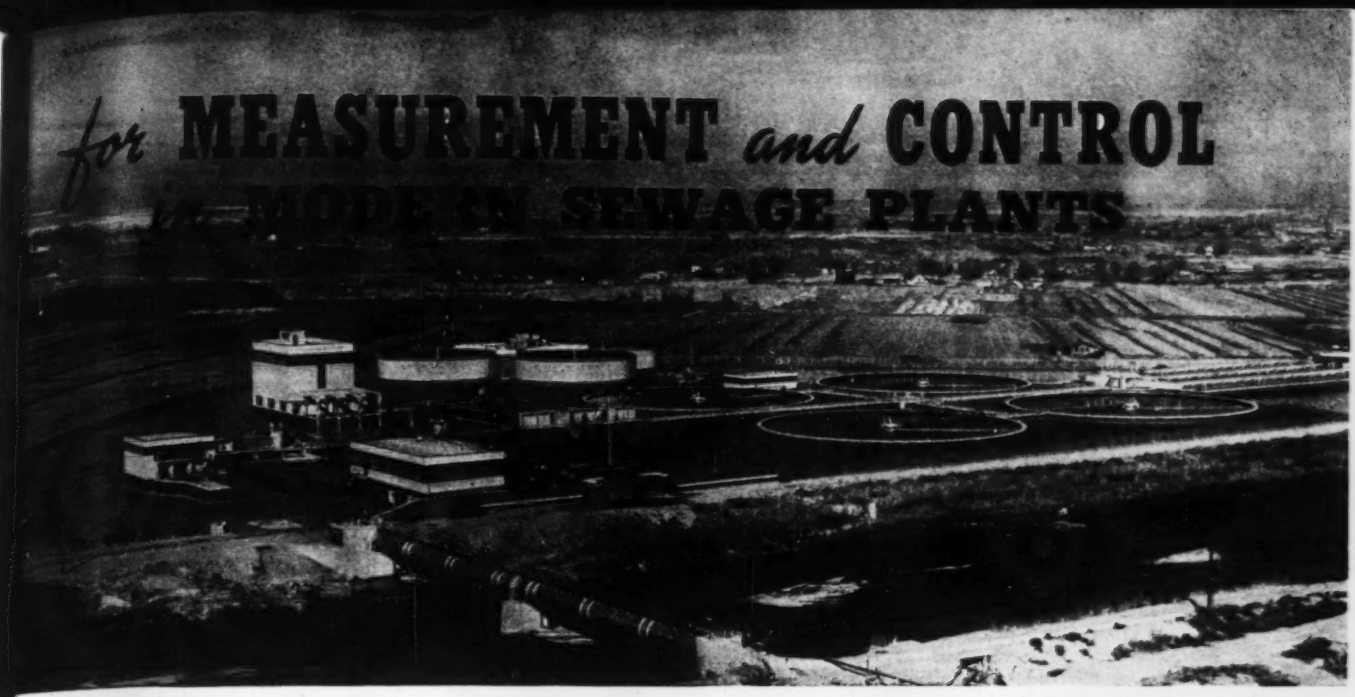
LOW BIDDERS:

1. DiMarco & Ciccone, Inc., White Plains, N. Y. (contract) $115,749
2. C. J. Fanning Constr. Co., Providence, R. I. (concrete) 118,814
3. I. Capaldi & Sons, Inc., Providence, R. I. (vitr. pipe) 129,545

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 15-in. conc. sewer	6,830 l. f.	$4.35	$2.33	$4.50*
2. 8-in. vitr. tile sewer	28,300 l. f.	1.55	1.30	1.45
3. 16-in. c. i. sewer; trench crossing, culvert, etc	300 l. f.	6.00	7.95	6.00
4. 8-in. c. i. sew. under RR	80 l. f.	4.00	4.25	3.50
5. Capped std. sgl. 15 x 6-in. Y or T fitting, concrete	40 ea.	4.00	4.92	3.00*
6. Capped std. 2-ft. sgl. 8 x 6-in. Y or T vit. tile fitting	1,660 ea.	1.30	2.03	1.50
7. Same, 2-ft. double	100 l. f.	2.00	2.08	2.50
8. House connection chimney	400 v. f.	2.00	1.10	2.00
9. Std. or spec. 1, 2, 3, or 4-way manhole, incl. rebuilt m.h., with covers, frames, steps, etc	164 ea.	85.00	140.00	80.00
10. Std. 1, 2, 3, or 4-way drop m.h. complete as above	7 ea.	100.00	140.00	150.00
11. Excavation, test pits	50 c. y.	1.50	2.25	3.00
12. Excavation, below grade	100 c. y.	1.00	3.00	4.00
13. Rock excavation	4,000 c. y.	1.00	5.00	4.00
14. 6-in. vitr. tile underdrain	100 l. f.	1.50	2.00	1.00
15. Lumber; fndn., sheeting, shoring	50 M.b.m.	20.00	40.00	40.00
16. Cr. stone or grav.; fndn., filling	80 c. y.	3.00	3.00	3.00
17. Cl. B conc., fndn. or cradle	100 c. y.	10.00	9.68	12.00
18. Brickwork, in place	10 c. y.	35.00	25.00	25.00
19. Road resurfacing, state hwys	850 l. f.	2.00	1.40	1.50
20. Road resurfacing, town hwys	31,200 l. f.	.40	.30	.50
21. Traffic police	1,000 hr.	1.00	.60	.65

* Vitrified tile and fittings

for MEASUREMENT *and* CONTROL *in* MODERN SEWAGE PLANTS



EMCO SEWAGE GAS METERS

Accurate measurement of gas generated during sludge digestion and used as a source of heat and power, is essential to the operation of sewage disposal plants. The destructive effect which sewage tank gas has on conventional gas meters necessitates the use of meters specially constructed for this service. EMCO Meters for Sewage Gas are constructed from materials which laboratory tests and actual service have proven resistant to the action of this gas. A full line of sizes is available for all volume requirements.

NORDSTROM LUBRICATED VALVES

The heterogeneous nature of the fluids in sewage disposal plants indicates the desirability of the pressure lubricated Nordstrom Plug Valve for all valve services therein. Basicly, the superiority of Nordstrom Valves over conventional types lies in their resistance to leakage and the fact that they always open or close easily. In addition, the Nordstrom Valve design is such that the presence of abrasive grit and other solid matter is of no consequence, and corrosion and erosion, common to most sewage plant valve services, are greatly nullified with the result that Nordstrom's will outlive the average valve several times over.

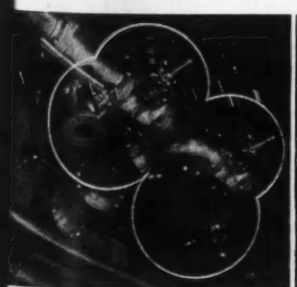
There is a Nordstrom Valve, ranging in size from ½ inch to 30 inch, available for every major service. In addition to standard metals, Nordstrom's are made in a variety of special alloys in designs for unusual requirements.

PITTSBURGH HOT and COLD WATER METERS

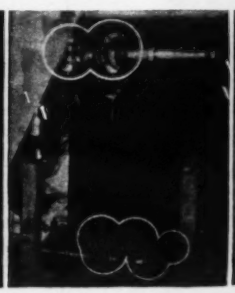
In order to definitely determine operating costs in sewage disposal plants, it is imperative to measure all water consumed. Since both hot and cold water are used in the disposal processes, it is of vital importance to install the proper meter for each service. Hundreds of thousands of Pittsburgh Water Meters have been purchased by large and small municipalities alike throughout the country. Their excellent construction, maintained accuracy and long life are time proven. Hot water meters are of special construction to operate under high temperatures.

SPECIAL BULLETINS DESCRIBING AND ILLUSTRATING THE APPLICATION OF EMCO GAS METERS, PITTSBURGH WATER METERS AND NORDSTROM VALVES IN THE SEWAGE DISPOSAL FIELD HAVE BEEN PREPARED. WRITE, ASKING FOR BULLETINS 1031 AND 1042.

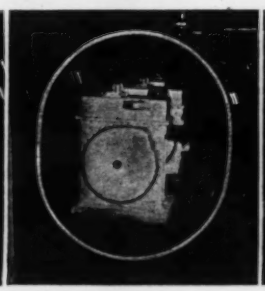
PITTSBURGH EQUITABLE METER COMPANY
MERCO NORDSTROM VALVE CO.
NEW YORK · BUFFALO · PHILADELPHIA · DES MOINES · CHICAGO · COLUMBIA
KANSAS CITY · TULSA · LOS ANGELES · *Main Offices* · PITTSBURGH, PA. · MEMPHIS · OAKLAND · HOUSTON



Nordstrom Valves, Gear Operated by Extended Handwheels in Vacuum Filter Room

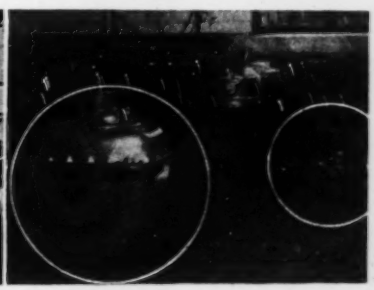


Installation of Gear Operated EMCO-Nordstrom's on Concentrated Sewage Sludge Lines



Three EMCO Pressed Steel Large Capacity Sewage Gas Meters Shown in Pump and Blower House

Pittsburgh Eureka Hot Water Meter Measuring Water to Coils in Four Digestion Tanks



Typical Sewage Plant Installation of an EMCO Large Capacity Iron Case Gas Meter and Pittsburgh Keystone Hot Water Meter

SEWER SYSTEM, CALIFORNIA

OWNER: City of Oakland, Calif.; W. N. Frickstad, city engineer, City Hall, Oakland.

PROJECT: Constructing sanitary sewer system in portions of Mountain Boulevard and other streets in Montclair District, Oakland, Calif. Involves furnishing and laying vitrified clay pipe sewer with concrete jacket and in concrete cradle.

CONDITIONS: All materials are to be furnished by contractor. Highway transportation facilities available. Wage rates are: skilled, $1.00 to $1.75 per hr.; semi-skilled, 87½c. to $1.00; and common labor, 81¼c. per hr.

BIDS: Seven bids were received September 5, 1939, ranging from the contract low of $134,455 to $194,194.

LOW BIDDERS:

1. Union Paving Co., San Francisco, Calif. (contract) $134,455
2. M. J. Lynch, San Francisco, Calif. 148,285
3. W. J. Tobin, Oakland, Calif. 154,288

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 24-in. vitr. sewer pipe	542 l. f.	$8.50	$9.50	$7.11
2. Same, with conc. cradle	220 l. f.	11.00	11.50	12.04
3. Same, with conc. jacket	20 l. f.	12.00	12.50	8.34
4. 21-in. vitr. sewer pipe	555 l. f.	6.00	7.75	7.81
5. Same, with concrete cradle	283 l. f.	8.00	9.90	8.56
6. 18-in. vitr. sewer pipe	2,358 l. f.	5.00	6.00	5.66
7. Same, with conc. cradle	1,664 l. f.	6.50	7.50	7.31
8. 15-in. vitr. sewer pipe	1,743 l. f.	4.00	4.50	4.51
9. Same, with conc. cradle	100 l. f.	5.00	5.60	5.61
10. 12-in. vitr. clay sew. pipe	850 l. f.	3.50	3.00	3.53
11. Same, with conc. cradle	736 l. f.	4.00	5.00	5.53
12. 8-in. vitr. sewer pipe	29,536 l. f.	1.95	2.20	2.43
13. Same, with conc. jacket	20 l. f.	3.00	3.00	3.00
14. Same, with conc. cradle	624 l. f.	2.50	2.60	5.00
15. 8-in cast iron pipe	144 l. f.	6.00	15.00	10.00
16. 8-in. corr. met. pipe, asbestos mounted	499 l. f.	3.00	3.00	3.00
17. Standard manholes, brick	181 ea.	110.00	100.00	110.00
18. Lampholes	57 ea.	35.00	26.00	25.00
19. Drop connections	20 ea.	10.00	20.00	12.00
20. 5-in. wye branches	356 ea.	5.00	5.00	1.50

SEWERAGE TUNNEL MINNESOTA

OWNER: City of Duluth, Minnesota. Burlingame, Hitchcock & Estabrook, Minneapolis, consulting engineers; Charles Foster, Duluth, associate engineer.

PROJECT: Gravity-flow tunnel section, approximately 4-ft. by 6-ft., through solid rock at depth of 28-ft. to 115-ft. Extends from 3rd Avenue East to 19th Avenue West, under First Street. Tunnel section of intercepting sewer, 10,400 ft. long.

CONDITIONS: All materials to be furnished by contractor. Rail, highway and water transportation available. Stipulated contract time, 305 calendar days, but in no case later than May 21, 1940. Wage rates are: skilled, $1.00 to $1.50 per hr.; semi-skilled, 75c. to $1.00; and common, 67½ to 75c per hr.

BIDS: Four bids were opened July 18, 1939, ranging from the contract low of $268,850 to $396,720.

LOW BIDDERS:

1. Rhude, Fryberger & McDonnell, Duluth, Minn. (contract) $268,850
2. Centaur Constr. Co., New York, N. Y. 331,602
3. Leo Butler Co., Silver Springs, Md. 346,899

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Vertical tunnel shafts	200 l. f.	$60.00	$70.00	$41.00
2. Standard (type A) tunnel	10,400 l. f.	23.00	29.00	30.40
3. 48-in. rein. conc. pipe	380 l. f.	32.00	35.00	44.00
4. 12-in. cased drill holes, in drift	86 ea.	25.00	12.00	23.00
5. 12-in. open drill holes, in rock	167 ea.	20.00	10.00	23.00

SEWERS, OHIO

OWNER: City of Lancaster, Ohio, A. F. Raab, Director Public Service; Burgess & Niple, Columbus, engineers.

PROJECT: Construction of sewers in various streets in Lancaster, Contract G.

CONDITIONS: Materials to be furnished by contractor. Project must be finished in 150 calendar days. Labor rates are: $1.25 to $1.50 per hr. for skilled labor; 80c. to $1.00 per hr. for semi-skilled; and 65 to 70c. per hr. for common.

BIDS: Four bids received May 24, 1939, ranging from the contract low of $61,511 to the high of $74,239. Contract awarded to low bidder.

LOW BIDDERS:

1. H. E. Miller, Columbus Ohio (contract) $61,511
2. Thompson-Conie Co., Columbus, Ohio 63,562
3. Kassouf Co., Cleveland, Ohio 64,320

EAST SIDE STORM RELIEF SEWER

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 36-in. sew. pipe, under 6 ft. cut	556 l. f.	$4.85	$5.75	$5.50
2. 36-in. sew. pipe, 6–10 ft. cut	6 l. f.	6.40	6.25	6.50
3. 36-in. sew. pipe, 10–12 ft. cut	160 l. f.	6.60	7.00	7.10
4. 36-in. sew. pipe, 12–14 ft. cut	190 l. f.	7.60	8.80	8.50
5. 36-in. sew. pipe, 14–16 ft. cut	538 l. f.	8.70	8.80	9.00
6. 36-in. sew. pipe, 16–18 ft. cut	346 l. f.	9.70	8.80	9.50
7. 30-in. sew. pipe, 6– 8 ft. cut	77 l. f.	4.25	4.50	4.50
8. 30-in. sew. pipe, 8–10 ft. cut	38 l. f.	4.75	4.90	4.50
9. 30-in. sew. pipe, 10–12 ft. cut	212 l. f.	5.50	5.30	5.50
10. 30-in. sew. pipe, 12–14 ft. cut	44 l. f.	6.25	5.70	6.90
11. 24-in. sew. pipe, under 6 ft. cut	339 l. f.	2.90	3.30	3.45
12. 24-in. sew. pipe, 6–8 ft. cut	172 l. f.	3.30	3.60	3.65
13. 24-in. sew. pipe, 8–10 ft. cut	178 l. f.	3.80	4.20	3.85
14. 24-in. sew. pipe, 10–12 ft. cut	90 l. f.	4.25	4.50	4.10
15. 24-in. sew. pipe, 12–14 ft. cut	20 l. f.	5.00	5.00	5.10
16. 24-in. culvert, under 6 ft. cut	352 l. f.	3.30	4.00	3.65
17. 15-in. leads and conn	38 l. f.	2.20	2.25	2.00
18. 12-in. leads and conn	356 l. f.	1.90	2.00	1.70
19. Std. manholes, under 6 ft. deep	3 ea.	60.00	60.00	60.00
20. Std. manholes, 6–8 ft. deep	1 ea.	75.00	80.00	70.00
21. Std. manholes, 8–10 ft. deep	1 ea.	95.00	100.00	95.00
22. Std. manholes, 10–12 ft. deep	1 ea.	120.00	120.00	110.00
23. Std. manholes, 12–14 ft. deep	1 ea.	150.00	140.00	125.00
24. Std. manholes, 14–16 ft. deep	2 ea.	175.00	160.00	145.00
25. Std. manholes, 16–18 ft. deep	1 ea.	200.00	180.00	170.00
26. Std. inlet M.H. under 6 ft. deep	1 ea.	70.00	70.00	62.00
27. Std. inlet	13 ea.	55.00	60.00	50.00
28. Spec. inlet, M.H. No. 11	1 ea.	150.00	125.00	100.00
29. Spec. headwall and endwks	1 ea.	200.00	125.00	80.00
30. Replac. brick and sew	10 ea.	3.50	5.00	5.00
31. Replac. curb and gutter	20 l. f.	1.50	1.25	1.60
32. Replac. brick on conc. pavmt	194 s. y.	3.50	3.50	3.25

ROLLING MILL ADDITION STORM RELIEF SEWER

1. 48-in. culv. pipe, und. 6 ft. cut	584 l. f.	7.05	10.25	9.50
2. 48-in. culv. pipe, 6–8 ft. cut	232 l. f.	7.45	10.50	11.00
3. Std. manholes und. 6 ft. deep	2 ea.	60.00	70.00	60.00
4. Spec. headwall	1 ea.	175.00	125.00	90.00
5. Drain and sew. replac	14 ea.	3.00	5.00	5.00
6. Conc. pavmt. replac	23 s. y.	2.50	2.50	2.60

UTICA PARK STORM SEWER

1. 42-in. sew. pipe, under 6 ft. cut	350 l. f.	5.50	7.25	6.20
2. Std. manholes, under 6 ft. deep	1 ea.	65.00	70.00	60.05
3. Spec. headwall and endwks	1 ea.	180.00	125.00	75.00

SPECIAL INLET-MANHOLE IN ALLEY SOUTH OF MAIN STREET

1. Spec. inlet manhole, complete	1 ea.	1,063.00	1,500.00	925.00

FETTERS RUN SANITARY INTERCEPTOR

1. 10-in. sew. pipe, under 6 ft. cut	62 l. f.	1.00	1.30	1.60
2. 10-in. sew. pipe, 6–8 ft. deep	326 l. f.	1.30	1.40	1.70
3. 10-in. sew. pipe, 8–10 ft. deep	774 l. f.	1.60	1.55	1.80
4. 10-in. sew. pipe, 10–12 ft. deep	296 l. f.	2.00	1.75	2.00
5. 10-in. sew. pipe, 12–14 ft. deep	152 l. f.	2.45	1.90	3.50
6. 10-in. sew. pipe, 14–16 ft. deep	42 l. f.	2.80	2.30	3.50
7. 10-in. sew. pipe, 16–18 ft. deep	36 l. f.	3.40	3.50	4.75
8. 10-in. sew. pipe 18–20 ft. deep	34 l. f.	4.15	3.50	5.25
9. 10-in. sew. pipe 20–22 ft. deep	36 l. f.	4.85	3.50	6.00
10. 10-in. sew. pipe 22–24 ft. deep	36 l. f.	5.60	6.00	7.00
11. 10-in. sew. pipe 24–26 ft. deep	16 l. f.	6.50	6.00	8.00
12. Std. manholes, 6–8 ft. deep	1 ea.	75.00	80.00	70.00
13. Std. manholes, 8–10 ft. deep	3 ea.	95.00	100.00	95.00
14. Std. manholes, 22–24 ft. deep	1 ea.	325.00	240.00	200.00
15. 10 x 6-in. wyes	46 ea.	1.60	1.50	1.45
16. Spec. manhole, No. 5	1 ea.	1,003.00	975.00	1,050.00

ROSE BANK—REESE SANITARY INTERCEPTOR

1. 8-in. sew. pipe, under 6 ft. cut	1,261 l. f.	.85	1.10	1.25
2. 8-in. sew. pipe, 6–8 ft. cut	318 l. f.	1.10	1.20	1.40
3. 8-in. sew. pipe, 8–10 ft. cut	226 l. f.	1.35	1.30	1.55
4. 8-in. sew. pipe, 10–12 ft. cut	141 l. f.	1.80	1.50	1.90
5. 8-in. sew. pipe, 12–14 ft. cut	81 l. f.	2.00	1.80	2.00
6. Std. manholes, under 6 ft. deep	3 ea.	60.00	70.00	60.00
7. Std. manholes, 6–8 ft. deep	3 ea.	80.00	80.00	70.00

8. Std. manholes, 8–10 ft. deep	2 ea.	95.00	100.00	95.00
9. 42-in. corr. culv. pipe	56 l. f.	11.00	15.00	17.00
10. Ejector station	1 ea.	3,927.60	2,300.00	2,400.00
ARNOLD STREET STORM RELIEF SEWER				
1. 15-in. sew. pipe, 6–8 ft. cut	134 l. f.	2.25	2.25	2.25
2. 15-in. sew. pipe, 8–10 ft. cut	376 l. f.	2.75	2.40	2.50
3. 12-in. leads and conn	26 l. f.	2.50	2.25	2.00
4. Std. manholes, 6– 8 ft. deep	1 ea.	90.00	80.00	70.00
5. Std. manholes, 8–10 ft. deep	1 ea.	115.00	100.00	95.00
6. Drain and sew. replacement	10 ea.	3.00	5.00	5.00
7. Brick on grav. pavmt. replac	193 s. y.	2.50	1.50	1.40
WEST COLUMBUS STREET STORM SEWER				
1. 27-in. sew. pipe under 6 ft. cut	165 l. f.	3.60	4.00	4.00
2. 24-in. sew. pipe under 6 ft. cut	223 l. f.	3.20	3.50	3.45
3. 21-in. sew. pipe under 6 ft. cut	326 l. f.	3.00	2.50	3.30
4. 18-in. sew. pipe under 6 ft. cut	315 l. f.	2.10	2.10	2.15
5. 12-in. sew. pipe under 6 ft. cut	621 l. f.	1.50	1.40	1.50
6. 12-in. leads and conn	116 l. f.	2.00	2.00	2.10
7. 10-in. leads and conn	20 l. f.	1.85	1.50	2.00
8. Std. inlet-M.H. under 6 ft. deep	12 ea.	75.00	70.00	60.00
9. Brick on conc. pavmt. replac	19 s. y.	3.50	3.50	3.50
10. Spec. headwall and endwks	1 ea.	155.00	100.00	50.00
EAST SIDE INDUSTRIAL SANITARY SEWER				
1. 8-in. sew. pipe, under 6 ft. cut	301 l. f.	.90	1.10	1.20
2. 8-in. sew. pipe, 6–8 ft. cut	726 l. f.	1.10	1.30	1.35
3. 8-in. sew. pipe, 8–10 ft. cut	84 l. f.	1.55	1.50	1.60
4. 8-in. sew. pipe, 10–12 ft. cut	102 l. f.	1.90	1.60	1.85
5. 8-in. sew. pipe, 12–14 ft. cut	52 l. f.	2.25	1.80	2.50
6. 8-in. sew. pipe, 14–16 ft. cut	142 l. f.	2.90	2.30	3.35
7. 8-in. sew. pipe, 16–18 ft. cut	112 l. f.	3.35	2.60	4.35
8. 8-in. sew. pipe, 18–20 ft. cut	58 l. f.	3.50	2.90	5.35
9. 8-in. sew. pipe, 20–22 ft. cut	46 l. f.	4.10	3.20	7.35
10. 8-in. sew. pipe, 22–24 ft. cut	8 l. f.	6.00	5.00	7.35
11. Special manhole No. 2	1 ea.	1,210.00	975.00	1,050.00
12. 8 x 6-in. wyes	59 ea.	1.20	1.00	.75
13. Std. manholes, under 6 ft. deep	1 ea.	65.00	70.00	60.00
14. Std. manholes, 6–8 ft. deep	1 ea.	80.00	80.00	70.00
15. Std. manholes, 8–10 ft. deep	1 ea.	100.00	100.00	95.00
16. Std. manholes, 12–14 ft. deep	1 ea.	140.00	140.00	125.00
17. Std. manholes, 16–18 ft. deep	1 ea.	190.00	190.00	170.00
18. Std. manholes, 22–24 ft. deep	1 ea.	325.00	240.00	220.00
19. Brick on conc. replace	8 s. y.	4.50	3.50	3.50
PLEASANTVILLE ROAD STORM SEWER				
1. 27-in. sew. pipe, under 6 ft. cut	316 l. f.	3.75	4.00	4.00
2. 27-in. sew. pipe, 6–8 ft. cut	44 l. f.	4.25	4.20	4.50
3. 24-in. sew. pipe, under 6 ft. cut	166 l. f.	3.20	3.60	3.45
4. 24-in. sew. pipe, 6–8 ft. cut	86 l. f.	3.60	3.80	3.65
5. 24-in. sew. pipe, 8–10 ft. cut	68 l. f.	4.10	4.00	3.85
6. 21-in. sew. pipe, 6–8 ft. cut	110 l. f.	3.00	2.80	3.50
7. 21-in. sew. pipe, 8–10 ft. cut	254 l. f.	3.60	3.00	3.70
8. 15-in. leads and conn	52 l. f.	2.25	2.25	2.55
9. 12-in. leads and conn	84 l. f.	2.00	2.00	2.40
10. Std. inlet-M.H., under 6 ft. deep	1 ea.	75.00	75.00	60.00
11. Std. inlet-M.H., 6–8 ft. deep	2 ea.	85.00	85.00	70.00
12. Std. inlet-M.H., 8–10 ft. deep	1 ea.	105.00	105.00	95.00
13. Std. inlets	2 ea.	55.00	60.00	50.00
14. Drain and sewer replace	2 ea.	3.00	5.00	5.00
15. Special headwall and endwks	1 ea.	160.00	125.00	55.00
16. Rock excav	20 c. y.	8.00	5.00	4.00

SEWERS, NEW YORK

OWNER: Board of Contract and Supply, Albany, N. Y.: J. J. McManus, City Hall, Albany, City Engineer.

PROJECT: Constructing sewer and appurtenant work on Crescent Drive North and Crescent Drive South, Albany. Approximately 4,200 ft. long.

CONDITIONS: Vitrified pipe used throughout. Contractors to furnish all materials and to pay the following wage rates: skilled, 75c. to $1.50 per hr.; semi-skilled, 75c. per hr.; and common labor, 45c. per hr.

BIDS: Three bids were received April 17, ranging from the contract low of $14,620 to $21,659. Contract awarded April 25, 1939.

LOW BIDDERS:

1. Edward Musto, Albany, N. Y. (contract).... $14,620
2. Samuel B. Easton, Albany, N. Y..... 21,242
3. North End Contracting Co., Albany, N. Y..... 21,659

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Trench excav. under 10 ft	4,500 c. y.	$0.60	$1.70	$1.98
2. Trench excav. 10–12 ft	520 c. y.	.75	2.00	1.98
3. 6 in. vit. clay sew. pipe	300 l. f.	.40	.40	.47
4. 10 in. vit. clay sew. pipe	12 l. f.	1.00	.90	1.01
5. 12 in. vit. clay sew. pipe	4,260 l. f.	1.16	1.20	1.17
6. 20 in. vit. clay sew. pipe	350 l. f.	2.15	2.75	2.77
7. 24 in. vit. clay sew. pipe	230 l. f.	3.30	3.75	3.84
8. 27 in. vit. clay sew. pipe	126 l. f.	5.51	5.50	5.28
9. 30 in. vit. clay sew. pipe	15 l. f.	6.40	5.25	6.02
10. 12x10-in. vit. wye branch	1 ea.	5.54	3.50	4.19
11. 12x6-in. vit. wye branches	85 ea.	4.42	3.00	3.54
12. 20x6-in. vit. wye branches	5 ea.	11.50	7.50	8.64
13. 24x6-in. vit. wye branches	3 ea.	16.28	10.00	12.39
14. 27x6-in. vit. wye branches	1 ea.	35.10	22.00	22.66
15. 30x6-in. vit. wye branches	1 ea.	38.88	24.00	25.46
16. Brick manholes, std	20 ea.	100.00	120.00	90.00
17. Br. manhole, old frames and cov.	6 ea.	85.00	100.00	80.00
18. Receiving basin (old mat'ls.)	1 ea.	100.00	90.00	220.62
19. Rebuild br. manhole, 48-in. sew.	L. S.	100.00	225.00	114.82
20. Cl. 3 conc., cradle (1:3:6)	95 c. y.	9.00	10.00	9.00
21. Lumber (left in trench)	1 M bm.	1.00	30.00	25.00
22. Misc. iron and steel	250 lb.	.08	.10	.10

SEWERS, MISSOURI

OWNER: University City, Mo., (St. Louis P. O.), Horner and Shifrin, St. Louis, consulting engineers; Walter Heimbuecher, city engineer.

PROJECT: Constructing joint district sewer ranging from 6 to 66-in. in diameter, Canton-Hanley Joint Sewer District. To be of vitrified clay, concrete, brick or segmental block construction, together with necessary junctions, inlets and manholes.

CONDITIONS: Materials to be furnished by contractor. To be completed in 200 consecutive calendar days. Transportation by highway available. Wage rates on project are: skilled, $1.50 to $1.75 per hr.; semi-skilled, $1.00 to $1.10 per hr.; and common, 80c. per hr.

BIDS: Nine bids were opened June 21, 1939, ranging from the contract low of $98,792 to $132,649. Engineer's estimate, $119,460.

LOW BIDDERS:

1. Samuel Kraus Co., St. Louis, Mo. (contract) $98,792
2. Martin & Reilly Constr. Co., University City, Mo..... 98,995
3. Henry L. Perkinson, St. Louis, Mo..... 103,015

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Trap inlet, type B	12 ea	$75.00	$85.00	$75.00
2. Excavation, Cl. A	16,000 c y	1.70	.90	1.90
3. Excavation, Cl. B	700 c y	1.70	1.20	1.90
4. Excavation, Cl. C	4,200 c y	1.70	5.00	1.90
5. Lumber, left in trench	20 M ft	30.00	30.00	30.00
6. Granular fill	300 c y	2.00	.90	1.50
7. Restore macadam pavmt	3,100 y	1.50	1.25	1.25
8. Extra macadam	50 ton	2.50	2.25	2.50
9. Extra screenings	25 ton	2.50	2.25	2.50
10. Sewer pipe, 6-in	50 l f	.55	.21	.35
11. Sewer pipe, 8-in	50 l f	.60	.31	.52
12. Sewer pipe, 10-in	20 l f	.70	.43	.60
13. Sewer pipe, 12-in	530 l f	.90	.55	.63
14. Sewer pipe, 15-in	355 l f	1.25	.90	1.05
15. Sewer pipe, 18-in	455 l f	1.40	1.08	1.35
16. Sewer pipe 21-in	38 l f	1.80	1.40	1.90
17. Sewer pipe, 24-in	281 l f	2.30	1.84	2.60
18. Sewer pipe, 33-in	367 l f	3.30	3.50	4.50
19. Sewer pipe, 36-in	367 l. f.	3.70	3.74	5.20
20. Elbow, 10-in. dia	3 ea.	2.00	2.00	3.50
21. T-junction, 10-in. dia	3 ea.	2.50	2.00	3.50
22. Elbow, 12-in. dia	2 ea.	2.80	2.50	4.00
23. T-junction 12-in. dia	2 ea.	3.00	2.50	4.00
24. 6-in. Y-junction on 15-in. pipe sewer	2 ea.	4.00	1.00	4.00
25. 6-in. Y-junction on 33-in. pipe sewer	2 ea.	1.00	1.00	7.00
26. 6-in. Y-junction on 36-in. pipe sewer	2 ea.	1.00	1.00	10.00
27. 45-in. conc. pipe sew., or 48-in. brick or seg. block	821 l. f.	7.00	8.02	6.00
28. 48-in. conc. pipe sew., or 51-in. brick or seg. block	855 l. f.	7.25	8.89	8.00
29. 51-in. conc. pipe sew., or 54-in. brick or seg. block	1,577 l. f.	9.00	9.12	9.00
30. 54-in. conc. pipe sew., or 57-in. brick or seg. block	1,007 l. f.	10.00	10.07	10.00
31. 63-in. conc. pipe sew., or 66-in. brick or seg. block	297 l. f.	12.00	12.27	12.00
32. 66-in. conc. pipe sew., or 69-in. brick or seg. block	317 l. f.	13.00	12.78	14.00
33. 6-in. Y-junct. on sew. 39-in	80 ea.	1.00	1.00	5.00
34. 8-in. Y-junct. on sew. 39-in	2 ea.	2.00	2.00	3.00
35. 10-in. Y-junct. on sew. 39-in	2 ea.	2.50	2.60	3.00
36. 12-in. Y-junct. on sew. 39-in	11 ea.	5.00	3.50	4.00
37. 15-in. Y-junct. on sew. 39-in	2 ea.	7.50	5.50	5.00
38. Com. brick masonry	120 c. y.	26.19	25.00	20.00
39. Cast iron	13,000 lb.	.045	035	.03
40. Cl. B concrete	75 c. y.	12.00	10.00	14.00
41. Cl. C concrete	20 c. y.	11.00	8.00	12.00
42. Riprap	40 s. y.	3.50	1.80	1.50
43. Conn. exist. house drains	200 l. f.	1.00	.40	1.00
44. 6-in. pipe stub in manhole	4 ea.	1.00	.90	1.50
45. 8-in. pipe stub in manhole	1 ea.	1.00	1.10	1.50
46. 10-in. pipe stub in manhole	1 ea.	1.70	1.40	2.00
47. 12-in. pipe stub in manhole	17 ea.	2.50	1.80	3.00
48. 15-in. pipe stub in manhole	3 ea.	5.00	2.90	4.00
49. 33-in. pipe stub in manhole	1 ea.	15.00	16.00	25.00
50. Conc. curb and gutter	10 l. f.	2.50	5.00	1.50
51. Replace conc. sidewalk	100 s. f.	.30	.30	.25
52. Junct. chamb., Hanley Rd. and Canton Ave	L. S.	2,000.00	1,228.44	2,500.00

SEWER RELOCATION CALIFORNIA

OWNER: U. S. Engineer Office, Los Angeles, Calif. Lt. Col. E. C. Kelton, District Engineer.

PROJECT: Relocation of North Outfall Sanitary Sewer due to construction of Sepulveda Flood Control Reservoir. Work located along Victory Blvd. between Balboa and Sepulveda Blvds., and along Sepulveda Blvd. between Victory and Burbank Blvds., Los Angeles, Calif. Work consists of laying 15,900 l.f. of sewer complete with appurtenances. Some manhole frames and covers are to be salvaged from existing sewer, and used in new construction. Sewer to be laid in open trench and/or tunnel.

CONDITIONS: All materials to be furnished by contractor and job must be completed in 210 days. Rail and highway facilities available. Wage rates specified are $1.50 per hr.; semi-skilled, $1.10 per hr.; and common, 62½c. per hr.

BIDS: Thirteen bids were received November 21, 1939, ranging from the lowest acceptable bid, $117,802 to $226,237. A bid of $96,643 was submitted, but it was not accepted. Engineer's estimate, $166,500, includes inspection and overhead.

LOW BIDDERS:

1. Artukovich Bros., Hynes, Calif. (contract)...$117,802
2. John L. Kruly, Los Angeles, Calif..... 125,741
3. Culjak & Zelko, Los Angeles, Calif..... 133,639

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 24-in. vitr. clay pipe sewer	9,800 l. f.	$6.52	$6.00	$6.70
2. 21-in. vitr. clay pipe sewer	6,200 l. f.	5.00	5.15	6.03
3. 6-in. vit. clay pipe house conn	700 l. f.	1.00	1.30	1.25
4. Chimneys	1,950 l. f.	2.00	3.00	2.00
5. Manholes (48)	L. S.	7,921.00	6,945.00	13,440.00
6. Salv., install m.h. frames, covers	32 sets	5.00	8.00	5.00
7. Manhole frames and covers	16 sets	25.00	25.00	23.00
8. Excav., outside estab. line or grade	800 c. y.	1.00	1.50	1.00
9. Cr. rock or grav. backfill	500 c. y.	1.25	2.50	2.50
10. Class C concrete	1,400 c. y.	6.00	13.00	17.00

SEWER, INDIANA

OWNER: City of Fort Wayne, Ind.; Charles W. Cole, South Bend, engineer.

PROJECT: Constructing Wayne St. section main intercepting sewer, including mechanical equipment for sewers. Tunnel is to be of concrete, monolithically cast, and of a semi-elliptical cross section. Stipulated contract time is 350 days. Transportation by rail and highway is available. Fifty per cent of the job is in water bearing sand, which will necessitate construction under compressed air.

BIDS: Five bids were received Apr. 18, 1939, ranging from the contract low of $866,538 to $1,195,847. Minimum labor rates are as follows: skilled, $1.50 per hr.; semi-skilled, 90c. per hr.; common, 60c. per. hr.

LOW BIDDERS:

1. Gargaro Co. Inc., Detroit, Mich (contract).. $866,538
2. Cooke Contracting Co., Detroit..... 1,092,277
3. Underground Construction Co., Chicago..... 1,133,624

Item	Quan.	Unit Prices (1)	(2)	(3)
1. 66-in. Semi-ellip. tunnel	7,760 l. f.	$36.75	$54.00	$51.75
2. 84-in. Semi-ellip. tunnel	9,308 l. f.	56.00	64.50	69.00
3. Std. manholes 15 ft	23 ea.	115.00	150.00	245.00
4. Add'l ht. manholes	667 l. f.	12.00	10.00	25.00
5. 24-in. Pipe tunnel sewer	556 l. f.	15.00	20.00	28.00
6. Special manhole	L.S.	800.00	450.00	1,231.00
7. 12-in. Vit. tile sewer	206 l. f.	3.00	4.00	8.00
8. 15-in. Vit. tile sewer	264 l. f.	2.80	4.50	8.00
9. 18-in Std. vit. culvert pipe	330 l. f.	4.60	6.00	10.00
10. 6-in. Vit. tile house conn	4 ea.	8.75	50.00	80.00
11. Std. manholes 6 ft	4 ea.	55.00	75.00	100.00
12. Add'l. ht. manholes	32 l. f.	7.50	12.00	15.00
13. Regulator and appur	L.S.	10,500.00	13,300.00	11,156.00
14. Regulator and appur	L.S.	5,000.00	5,500.00	5,125.00
15. Regulator and appur	L.S.	5,600.00	7,500.00	7,874.00
16. Regulator and appur	L.S.	5,000.00	6,000.00	6,494.00
17. Regulator and appur	L.S.	5,000.00	6,500.00	5,382.00
18. Jct. chamber	L.S.	2,200.00	3,000.00	2,521.00
19. Asph. pav't repl	286 s. y.	5.00	4.00	4.00
20. Conc. asph. pav. repl	45 s. y.	2.50	4.50	4.00
21. Brick pav. & repl	7 s. y.	4.00	10.00	6.00
22. Gravel repl	65 s. y.	1.00	1.00	2.20
23. Align shaft	672 l. f.	3.00	4.50	3.50

INTERCEPTING SEWER, WIS.

OWNER: City of Wausau, Wis.; J. Donohue Engineering Co., Sheboygan, Wis., engineers.

PROJECT: Construction of east side interceptor sewer No. 5 and sewer pipe for the same. The project consists of construction of an intercepting sewer along the left bank of the Wisconsin River, including two river crossings, one an 18-in. and the other a 30-in. one, a rock tunnel section 1,350 ft. long, and a transition section 260 ft. long. The remainder of the pipe line is laid in soil consisting mainly of compacted gravel and sand.

CONDITIONS: Owner furnished sewer pipe, delivered to the job. No bids were received on alternate of monolithic concrete sewer for 42-in. and 48-in. sizes. A condition affecting cost is presence of granite ledge rock which must be tunneled in order to provide connections for various sewer outlets that now discharge directly into the Wisconsin River. The common wage scale set forth in the specifications, recognized by PWA and approved by the city of Wausau, is 50c. per hr. Semi-skilled wages will range from 65c. to 85c. per hr. Skilled rates will run from 65c. to $2.00 per hr., the highest classification being for divers. A 100-per cent performance bond is required.

BIDS: Three bids were received Mar. 9, 1939, ranging from the contract low of $433,511 to $532,030.

LOW BIDDERS:

1. United Construction Co., Green Bay, Wis. (contract) $433,511
2. Chas. A. Green & Son, Appleton, Wis..... 464,141
3. Thornton Bros. Co., St. Paul, Minn..... 532,030

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Control Sta. No. 6	L.S.	$1,500.00	$1,200.00	$2,000.00
2. Control Sta. No. 7	L.S.	2,000.00	2,150.00	3,000.00
3. Control Sta. No. 8	L.S.	1,650.00	1,500.00	2,500.00
4. Control Sta. No. 9	L.S.	1,650.00	1,700.00	1,800.00
5. 6x6-ft. sewer	1,350 ft.	38.50	45.00	65.00
6. 6x6-ft. transition sect	260 ft.	55.00	50.00	75.00
7. 48-in. sewer	1,900 ft.	39.50	43.00	45.00
8. 42-in. sewer	2,450 ft.	26.00	31.75	25.00
9. 36-in. sewer	1,500 ft.	24.50	25.00	16.00
10. 30-in. sewer	3,570 ft.	7.80	9.00	8.00
11. 27-in. sewer	200 ft.	11.25	10.00	10.00
12. 21-in. sewer	1,600 ft.	8.50	3.00	2.00
13. 18-in. sewer	2,340 ft.	12.75	14.00	15.00
14. 15-in. sewer	1,200 ft.	3.50	8.00	10.00
15. 12-in. sewer	740 ft.	4.50	4.00	8.00
16. 10-in. main sewer	680 ft.	3.00	3.50	10.00
17. 10-in. C.B. conn. sewer	100 ft.	2.00	3.00	2.50
18. 8-in. sewer	1,175 ft.	3.00	2.50	10.00
19. 8-in. C.I.P. sewer	360 ft.	6.75	10.00	40.00
20. 6-in. Service conn	800 ft.	1.50	2.00	2.00
21. 6-in. Risers (72)	550 ft.	1.50	2.00	2.00
22. 30-in. River crossing	L.S.	22,500.00	20,000.00	22,500.00
23. 18-in. River crossing	L.S.	29,000.00	25,000.00	42,740.00
24. Rock excav. manhole	120 c. y.	12.00	14.00	10.00
25. Rock excav.	2,700 c. y.	7.00	7.00	10.00
26. Rock excav.	500 c. y.	15.00	16.25	12.00
27. Manholes (68)	1,080 l. f.	7.00	8.25	10.00
28. Manhole drops (23)	220 l. f.	5.00	6.15	5.00
29. Stormwater outlet	L.S.	1,250.00	1,100.00	1,000.00
30. 18-in. Pipe cradle	1,000 ft.	0.75	1.00	1.20
31. 15-in. Pipe cradle	1,000 ft.	0.65	0.60	1.00
32. 12-in. Pipe cradle	800 ft.	0.50	0.60	0.75
33. 10-in. Pipe cradle	300 ft.	0.50	0.60	0.70
34. Cr. stone found., 48-in. pipe	100 ft.	0.30	0.40	0.70
35. Cr. stone found., 36-in. pipe	300 ft.	0.20	0.40	0.60
36. Cr. stone found., 30-in. pipe	1,000 ft.	0.20	0.40	0.50
37 Cr. stone found., 18-in. pipe	500 ft.	0.20	0.35	0.40
38. Sheeting left in place	20 M fbm	0.04	0.03	0.05
39. Underdrain, 36-in	500 lt.	0.50	0.60	2.20
40. Underdrain, 30-in	800 ft.	0.50	0.60	2.00
41. Underdrain, 18-in	500 ft.	0.20	0.35	1.50
42. Underdrain, 15-in	500 ft.	0.20	0.30	1.40
43. Underdrain, 12-in	200 ft.	0.20	0.30	1.25
44. Class C concrete	25 c. y.	15.00	12.75	40.00

TEST BORINGS, SEWER BRONX, NEW YORK

OWNER: Department of Public Works, Municipal Building, New York, N. Y., E. I. Judd, supervising engineer.

PROJECT: Contract 1, test borings for East Bronx Intercepting Sewer, Wards Island Sewage Treatment Works, on E. 133rd St. near St. Ann's Ave., east to Locust Ave., then north past 144th St.

CONDITIONS: Must be completed in 60 consecutive days. Rail, water, and highway transportation facilities available. Contractor furnishes all labor and materials.

BIDS: Two bids were received on May 29, $2,791 and $2,914.

LOW BIDDERS:

1. Sprague & Henwood, New York, N. Y. (contract) $2,791
2. Battle Bros. Drilling Co., Scranton, Pa..... 2,914

Item	Quan.	Unit Prices (1)	(2)
1. Sinking casings	560 l. f.	$2.90	$2.50
2. Dry samples	110 ea.	1.00	1.00
3. Diamond drill. for 1⅛ in. rock cores	330 l. f.	2.90	3.95
4. Ground wat. determin. (strainer meth.)	100 l. f.	1.00	1.00

SEWAGE WORKS, MASS.

OWNER: Town of Mansfield, Mass.; Frank A. Barbour, Boston, engineer.

PROJECT: Construction of an outfall sewer and a sewage treatment plant located 1½ mi. south of the center of the town. Treatment plant consists of an Imhoff tank, secondary settling and a trickling filter. Stipulated contract time is 250 calendar days. Transportation facilities by rail and highway are available.

BIDS: Five bids were received Feb. 23, 1939, ranging from the contract low of $105,415 to $122,700. Minimum labor rates are as follows: skilled, $1.00 per hr.; semi-skilled, 60c. per hr.; common, 50c. per hr.

LOW BIDDERS:

1. Middlesex Construction Co. Inc., Framingham, Mass. (contract) $105,415
2. C. Reppucci & Son, Boston, Mass..... 110,343
3. John MacDonald Construction Co., Newton, Mass. 121,969

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth exc., trenches	2,800 c. y.	$1.45	$1.50	$2.00
2. Earth exc. above El. 103	9,400 c. y.	1.65	1.10	1.00
3. Earth exc. below El 103	600 c. y.	4.40	3.50	5.00
4. Earth exc., drain ditch	1,900 c. y.	.50	1.00	1.00
5. Earth exc., borrow pit	1,000 c. y.	.30	.35	.50
6. Loam	1,000 c. y.	1.50	2.50	1.50
7. Excav., entrance road	600 c. y.	.35	.60	1.00
8. Rock excav.	50 c. y.	5.00	6.00	1.00
9. Concrete 1/6 mix	980 c. y.	19.00	18.00	24.00
10. Concrete 1/8 mix	110 c. y.	9.00	11.00	22.00
11. Protect. coat on concrete	300 s. y.	.40	1.70	3.00
12. Reinf. steel	48,000 lb.	.04	.06	.05
13. Brick masonry, manholes	30 c. y.	25.00	30.00	40.00
14. 4-in Tar ctd. c. i. pipe	660 l. f.	.70	.90	.85
15. 6-in. Cem. lin. c. i. pipe	2,700 l. f.	1.15	1.38	1.30
16. 8-in. Tar ctd. c. i. pipe	170 l. f.	1.45	1.69	1.65
17. 12-in. Tar ctd. c. i. pipe	150 l. f.	2.50	2.57	2.75
18. 16-in. Tar ctd. c. i. pipe	440 l. f.	3.75	3.77	5.00
19. C. I. b&s fittings	11.5 ton	120.00	140.00	185.00
20. C. I. flgd. pipe fittings	0.8 ton	170.00	175.00	225.00
21. C. I. tr. fil. and distr.	L.S.	3,500.00	3,950.00	4,500.00
22. 8-in. C. I. sludge piping	L.S.	260.00	325.00	500.00
23. 3-in. C. I. sludge agit. piping	L.S.	275.00	275.00	400.00
24. Flush. conn. complete	2 ea.	32.00	40.00	50.00
25. Fire hydrants	3 ea.	82.00	83.00	100.00
26. Flush hydrants	4 ea.	44.00	88.00	50.00
27. Gate valves, etc.	L.S.	1,100.00	1,456.00	1,200.00
28. 6-in. Vit. pipe	40 l. f.	.45	.30	.50
29. 18-in. Vit. pipe	2,680 l. f.	1.30	1.70	2.00
30. Sludge bed undr. system	L.S.	295.00	625.00	600.00
31. Trickling undr. system	L.S.	900.00	825.00	1,200.00
32. 8-in. Vit. pipe subdrs	800 l. f.	.65	1.20	1.00
33. 8-in. conc. pipe	250 l. f.	.40	.60	1.00
34. 10-in. concrete pipe	140 l. f.	.50	.70	1.00
35. 12-in. Rein. conc. pipe	50 l. f.	1.05	1.20	2.00
36. 12-in. Pl. conc. pipe	310 l. f.	.55	1.10	1.25
37. 18-in. Pl. conc. pipe	45 l. f.	1.50	1.60	2.00
38. 24-in. Rein. conc. pipe	50 l. f.	3.00	3.00	4.50
39. Trickling fil. crushed stone	3,400 c. y.	3.00	3.20	3.25
40. Sludge bed filtering mat	280 c. y.	1.50	2.50	3.25
41. Adm. bldg., superstructure	L.S.	6,200.00	8,100.00	7,500.00
42. Sludge pump house superstruc.	L.S.	2,000.00	2,500.00	2,800.00
43. Elec. system, complete	L.S.	1,800.00	2,500.00	2,400.00
44. Creo. timber	1M fbm	50.00	125.00	150.00
45. Venturi meter	L.S.	1,400.00	1,400.00	1,600.00
46. Adj. closing siphon	L.S.	930.00	950.00	850.00
47. Filter nozzles	L.S.	425.00	450.00	475.00
48. Two 15-in comm. mechanisms.	L.S.	4,900.00	4,200.00	4,350.00
49. Second. tank slu. pump	L.S.	650.00	925.00	900.00
50. Water meter	L.S.	125.00	105.00	125.00
51. Copper water stops	160 l. f.	.35	.70	.25
52. Lead fl. sheets for Imhoff tank	L.S.	200.00	25.00	50.00
53. Misc. steel	L.S.	1,700.00	100.00	1,000.00
54. Misc. iron castings	L.S.	700.00	590.00	500.00
55. Screens in cl. tank, etc.	L.S.	1,700.00	1,690.00	1,500.00
56. Rubble paving, drainage ditch	40 c. y.	4.50	2.50	3.00
57. Asphalt road repairs	L.S.	50.00	40.00	100.00
58. Macadam road	1,300 s. y.	.25	.55	1.00
59. Granolithic walks	270 s. y.	1.25	1.35	2.70
60. Wood guard rail	1,100 l. f.	.50	.55	.45
61. Chain link fence, tr. plant	L.S.	2,000.00	1,675.00	1,875.00
62. Chain link fence, roadway	1,125 l. f.	1.15	1.15	1.25
63. Chain link gate	L.S.	60.00	86.00	100.00
64. Grassing	1.7 acre	100.00	300.00	300.00

HIGHWAY TUNNEL, PA.

OWNER: Pennsylvania Turnpike Commission; J. D. Faller, secretary-treasurer, Harrisburg; Samuel W. Marshall, engineer.

PROJECT: Construction of Sideling Hill Tunnel, Contract S2, Wells and Taylor Townships, Fulton County. Total length of tunnel will be 6,626 ft. Builders of the South Penn Railroad had drilled 3,247 ft.—1,200 ft. for double track, and 2,047 ft. for single track. Sections of existing tunnel were opened to inspection prior to bidding. Stipulated contract time is 315 days.

BIDS: Eight bids were received Mar. 30, 1939, ranging from the contract low of $2,444,527 to $3,467,834. Minimum wage rates are as follows: skilled, $1.00 per hr.; semi-skilled, 65c. per hr.; common, 52½c. per hr.

LOW BIDDERS:

1. The Arundel Corp., Baltimore (contract).. $2,444,527
2. The Hunkin Conkey Construction Co., Cleveland 2,678,278
3. Mason & Hanger Co., Inc., New York, N. Y. 2,707,451

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excav. loose lat. previously driv. area	12,800 c. y.	$2.00	$4.00	$7.00
2. Excav. of tunnel in prev. undriv. area	93,000 c. y.	5.70	6.05	7.00
3. Excav. of tunnel in prev. driven area	31,200 c. y.	5.70	11.39	7.00
4. Excav. enlargement of tunnel-order.-eng	1,000 c. y.	5.70	10.00	7.00
5. Open cut tunnel excav	25,000 c. y.	0.55	4.00	1.50
6. Permanent timbering in tunnel	100 M.b.m.	60.00	75.00	120.00
7. Permanent timber logging	150 M.b.m.	60.00	100.00	120.00
8. Conc. masonry — tunnel lining	34,600 c. y.	16.00	13.53	11.00
9. Conc. masonry — tunnel ceiling	3,400 c. y.	26.00	20.55	20.00
10. Conc. masonry — pave.	16,920 s. y.	3.60	3.56	4.00
11. Conc. masonry — type 1 curbing	6,622 l. f.	1.30	1.20	1.00
12. Conc. masonry — type 2 curbing	6,222 l. f.	1.50	1.42	1.00
13. Conc. masonry — sidewalk	1,420 s. y	2.00	2.28	2.00
14. Conc. masonry — lodges	13,244 l. f.	1.00	1.50	1.00
15. Conc. mason.— encasement high tens. ducts	6,622 l. f.	1.50	1.08	0.50
16. Conc. and precast conc. mason.— drain. gally	6,540 l. f.	12.00	8.25	13.00
17. Grout	2,650 c. y.	13.00	15.00	15.00
18. Pneu.—applied sand—cem. mortar	100 c. y.	30.00	25.00	16.00
19. Sand for grout	400 c. y.	5.00	5.05	5.00
20. Portland cement	91,100 bbl.	2.40	2.00	2.80
21. Stonfille	4,500 c. y.	2.00	4.00	4.00
22. Subbase material	8,080 c. y.	1.85	1.75	2.00
23. Subgrade material	4,050 c. y.	3.10	2.00	2.00
24. Steel arch pipe, sills and columns	950,000 lb.	0.04	0.047	0.07

25. Steel beam lagging supp. and coil. angles	396,000 lb.	0.04	0.08	0.06
26. High tensile steel bolts	1,500 lb.	0.25	0.30	0.20
27. Misc. steel	41,000 lb.	0.12	0.15	0.20
28. Steel plate tunnel lining	20,000 s. f.	0.50	0.80	0.80
29. Wrought iron rungs	380 lb.	0.12	0.25	0.10
30. Compressed air lines	5,000 l. f.	0.50	0.60	1.00
31. Inlet castings	40,400 lb.	0.11	0.125	0.20
32. Cast steel hanger supports	15,000 lb.	0.18	0.19	0.60
33. Reinforcing rods	1,830,000 lb.	0.06	0.038	0.05
34. Wire mesh	447,000 lb.	0.06	0.072	0.08
35. Ceiling hangers	4,900 l. f.	2.00	2.25	2.50
36. Water stops	43,600 s. f.	0.70	0.90	1.00
37. Copper, brass and bronze	10,700 lb.	0.60	0.80	1.00
38. Cast iron pipe	10,300 lb.	0.12	0.07	0.20
39. Pressure pipe, 5-in	6,590 l. f.	1.50	1.50	2.40
40. Pipe drain, 2-in	3,300 l. f.	0.65	0.94	1.00
41. Brass valves	68 ea.	16.300	16.300	20.00
42. Ducts, 2¼-in	65,300 l. f.	0.35	0.2557	0.20
43. Ducts, 3¼-in	26,300 l. f.	0.40	0.2943	0.20
44. Elect. conduits, 1-in	41,800 l. f.	0.40	0.616	0.60
45. Elect. conduits, 1¼-in	1,000 l. f.	0.50	0.814	0.80
46. Elect. conduits, 1½-in	100 l. f.	0.60	0.902	0.80
47. Elect. conduits, 2-in	14,000 l. f.	0.75	1.056	1.20
48. Elect. boxes — ceiling light	36 ea.	140.00	53.81	120.00
49. Elect. boxes — inclined light	472 ea.	110.00	46.64	60.00
50. Elect. boxes — vert. light	20 ea.	110.00	45.65	90.00
51. Elect. boxes — control	22 ea.	170.00	87.45	160.00
52. Elect. boxes — relay boxes	11 ea.	170.00	87.45	160.00
53. Elect. boxes — junction boxes JB1	11 ea.	35.00	42.90	35.00
54. Elec. boxes — junction boxes JB2 & JB3	22 ea.	30.00	33.83	20.00
55. Elect. boxes — outlet	20 ea.	25.00	29.15	22.00
56. Elect. boxes — outlet	44 ea.	25.00	22.00	30.00
57. Elect. boxes — outlet	11 ea.	25.00	8.80	8.00
58. Sheet steel for panning	8,000 lb.	0.15	0.50	0.05
59. Steel pipe for panning drains and grouting	3,700 l. f.	0.45	0.60	0.50
60. Drilling holes in rock	15,000 l. f.	0.40	0.60	0.60
61. Field welding of steel plate tun. lining	10,000 s. f.	0.35	1.00	0.25
62. Full circ. and split vit. clay pipe drs	3,200 l. f.	1.20	1.00	1.00
63. Exp. bolts for wire mesh	1,500 ea.	0.50	0.50	0.20
64. Cork joint filler	3,120 s. f.	0.20	0.50	0.50
65. French drains	20,400 l. f.	1.15	0.60	2.00
66. Waterproofing	21,900 s. y.	0.30	0.30	0.20
67. Grouted rubble ditch	1,000 s. y.	1.50	3.60	1.50
68. Water wells	600 l. f.	4.00	8.00	20.00
69. Class 1 excav	145,000 c. y.	0.35	0.65	0.75
70. Class excav	1,500 c. y.	2.50	3.10	2.00
71. Subbase mat	1,200 c. y.	1.85	2.00	2.00
72. Conc. (not incl. cement)	300 c. y.	22.00	22.50	18.00
73. Plain steel bars	10,000 lb.	0.06	0.06	0.05
74. Stone backfill for struct	25 c. y.	2.50	4.25	4.00
75. Manholes	4 ea.	120.00	207.00	80.00
76. Type RS-1 inlets (incl. Portland cement)	6 ea.	110.00	207.00	60.00
77. Interlocking style cast iron pipe, 18-in	110 l. f.	2.75	4.14	4.00
78. Interl. style cast iron pipe (Heavy) 30-in	150 l. f.	7.55	12.65	10.00
79. Interlocking style cast iron pipe, 36-in	156 l. f.	9.30	13.57	10.00
80. Asph. coat. corr. metal pipe, #8Ga. (F.C.) 60-in	175 l. f.	13.50	15.30	16.00
81. Corr. metal pipe, 54-in	140 l. f.	9.30	10.70	11.00
82. Reinf. conc. pipe (inc. Port. cem.) 18-in	140 l. f.	2.25	2.88	3.00
83. Reinf. conc. pipe (ex. str. inc. P. C.) 24-in	210 l. f.	3.45	4.72	4.00
84. Stone underdrain	1,360 l. f.	0.80	1.27	1.00
85. Perf. vit. clay tile underdrain 8-in	3,800 l. f.	1.10	2.30	1.00
86. Tile outlets, 8-in	25 l. f.	0.65	2.07	1.00
87. D. S. vit. clay pipe-enc. conc. (inc. P. C.) 24-in.	1,850 l. f.	8.75	13.80	10.00
88. Grouted rubble gutter (inc. P. C.)	700 s. y.	1.60	4.14	3.00
89. Grouted rubble segmental spillway (inc. P. C.)	8 c. y.	15.00	13.80	15.00
90. Portland cement	450 bbls.	2.40	2.70	2.80

SUBWAY ALTERATIONS NEW YORK

OWNER: Board of Transportation, City of New York, N. Y.

PROJECT: Construction or reconstruction of ventilators, emergency exit, station entrances, mezzanine and station control building, together with incidental alterations of parts of Seventh Avenue-Lexington Avenue, and Manhattan-Bronx Rapid Transit Railroads beginning at a point in Grand Concourse near 140th St. and running north to point near 150th St. Alterations needed to permit widening of Grand Concourse in Bronx Borough.

CONDITIONS: Contractor to furnish all materials and complete work in six months. Railroad to be operated continuously during progress of work. Rail, highway and water transportation available. Wages are: skilled, $1.15 to $2.12½ per hr.; semi-skilled, 52½c. to $1.50; and common labor, 50 to 87½c. per hr.

BIDS: Ten bids were opened February 20, 1940, ranging from the contract low of $118,788 to $197,695.

LOW BIDDERS:

1. Lynn Construction Co., Inc., New York, N. Y. (contract) $118,788
2. Skolnick Building Corp., New York, N. Y. 126,567
3. Laurence J. Rice, Forest Hills, New York, N. Y. 143,589

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excavation	2,900 c. y.	$1.25	$3.00	$3.00
2. Rock excavation	1,200 c. y.	5.00	12.00	10.00
3. Concrete masonry	1,470 c. y.	19.00	16.00	16.00
4. Protective concrete masonry	280 c. y.	19.00	11.00	16.00
5. Finished surf., conc	5,000 s. f.	.08	.03	.11
6. Brick masonry	10 c. y.	35.00	30.00	30.00
7. Hollow terra cotta, brick or tile masonry	30 c. y.	20.00	15.00	20.00
8. Remove, dispose old masonry	840 c. y.	16.00	6.50	15.00
9. Plastering, on brick, hol. tile and metal lath	25 s. y.	1.50	1.40	1.50
10. Plastering, sew. manhole, basins	40 s. y.	2.00	1.50	1.00
11. Steel beams and shapes	175 ton	97.00	120.00	113.00
12. Architect. steel and iron	2,500 lb.	.08	.12	.15
13. Steel reinforcing bars	45 ton	110.00	100.00	140.00
14. Remove and dispose exist. steel	50 ton	10.00	20.00	20.00
15. Cut existing steel	150 s. in.	.30	1.00	.30
16. Drill holes	150 ea.	1.00	1.50	2.00
17. Remove old rivets	300 ea.	.75	.50	1.00
18. New rivets to connect steel	20 ea.	1.00	1.50	1.00
19. Remove, re-erect exist. steel	600 lb.	.04	.05	.05
20. Filling unused holes	100 ea.	.40	1.50	1.00
21. Countersink existing holes	10 ea.	1.00	2.00	1.50
22. Ream holes in exist. steel	10 ea.	1.00	2.00	1.00
23. Misc. iron castings	5,000 lb.	.05	.08	.07
24. Wire mesh (beam wrapping)	600 lb.	.15	.10	.30
25. Wire mesh (metal lath)	10 s. y.	1.00	.80	1.00
26. Waterproofing, 1-ply	160 s. y.	.40	.55	.50
27. Waterproofing, 3-ply	1,530 s. y.	.90	1.50	1.50
28. Waterproofing, 4-ply	980 s. y.	1.20	1.95	2.00
29. Brick, laid in asph. mastic, 1 layer	13 c. y.	40.00	35.00	50.00
30. Brick, laid in asph. mastic, 2 layers	4 c. y.	40.00	50.00	50.00
31. 6-in. Cl. A cast iron pipe	35 l. f.	12.00	6.00	3.00
32. Copper brg. cem. lined 3-in. steel pipe	240 l. f.	1.44	1.50	3.00
33. As above, 6-in. dia	25 l. f.	4.00	4.00	3.00
34. 6-in. back pressure valve	2 ea.	42.00	30.00	50.00
35. 12-in. vitr. sewer pipe	230 l. f.	.85	1.50	5.00
36. Spurs	8 ea.	20.00	10.00	4.00
37. Vitr. brick or granite blk. lining	6 s. y.	3.50	10.00	10.00
38. ¾-in. steel electr. conduit	1,800 l. f.	.22	.40	.30
39. 1-in. steel electr. conduit	350 l. f.	.25	.50	.55
40. 1¼-in. steel electr. conduit	150 l. f.	.29	.70	.70
41. 4x4x2-in. c.i. outlet boxes	10 ea.	1.75	2.00	4.00
42. 4x4x3-in. c.i. outlet boxes	90 ea.	1.90	2.25	5.00
43. 6x6x4-in. c.i. pull boxes	5 ea.	4.50	5.00	20.00
44. 18x18x6-in. c.i. junction boxes	1 ea.	60.00	60.00	155.00
45. 27x55x6-in. c.i. panel bd. boxes	1 ea.	100.00	150.00	176.00
46. 29x45x6-in. c.i. panel bd. boxes	1 ea.	100.00	140.00	172.00
47. Remove, reset existing gratings	1,600 s. f.	.60	.50	1.00
48. Steel curb angle	670 l. f.	1.35	2.00	2.00
49. Temp. pavement, roadway	1,400 s. y.	1.35	1.30	2.00
50. Upper 3-in. finish, conc. walls	120 s. y.	2.50	2.35	1.10
51. Support, maintain, protect RR	L. S.	4,000.00	7,800.00	5,650.00
52. Underpinning bldg., 393 Gr. Concourse	L. S.	1,000.00	100.00	1,200.00
53. As above, 395 Grand Concourse	L. S.	1,000.00	100.00	300.00
54. As above, 487 Grand Concourse	L. S.	500.00	100.00	500.00
55. As above, 150 E. 144th St	L. S.	1,000.00	100.00	1,500.00
56. As above, 157-163 E. 149th St	L. S.	1,000.00	100.00	2,000.00
57. Remove, reset emerg'y exit cover	L. S.	250.00	675.00	380.00
58. Alter, reconstr. exist. pipes	L. S.	610.00	1,900.00	860.00
59. Glazed tile	1,500 s. f.	.80	1.00	1.00
60. Weather-proof tile	220 s. f.	1.25	1.00	5.50
61. Mosaic and tile bands	220 s. f.	4.00	3.50	4.50
62. Mosaic and tile tablets	30 s. f.	5.00	4.00	5.50
63. Wainscots or bases	270 s. f.	.20	.30	.30
64. Finish on conc., brick or hol. tile	50 s. f.	.25	.20	.30
65. 3-in. floor finish	3,200 s. f.	.20	.25	.23
66. Concrete copings	60 c. f.	1.25	1.20	2.00
67. Self-supported stairs	80 l. f. tr.	1.65	1.50	2.00
68. Self-support. stairway landings	170 s. f.	.50	1.00	1.00
69. Supported stairs	200 l. f. tr.	1.25	.80	1.00
70. Non-slip metal treads	160 s. f.	.95	1.50	2.00
71. Cement wall strings	60 l. f.	.80	.50	1.00
72. Weepholes	30 ea.	.20	.25	1.00
73. Galv. strap anchors	50 ea.	.10	.50	1.00
74. Hollow metal change booth, type AHa	1 ea.	3,000.00	3,000.00	3,750.00
75. Hollow metal doors, type K	20 s. f.	2.00	4.00	5.00
76. Hollow metal doors, type S	2 set	85.00	100.00	300.00
77. Railings, type GS	170 s. f.	1.25	3.50	.90
78. Railings, type B	35 s. f.	1.50	3.00	4.00
79. Enameled sign plates	70 s. f.	.70	1.50	2.00
80. Enameled sign plates, type A	40 s. f.	1.00	1.00	2.00
81. Street railings, type K	45 l. f.	17.00	16.00	16.00
82. Oak hand-rails	110 l. f.	1.25	1.00	3.00
83. Register faces	3 ea.	10.00	25.00	20.00
84. Painting surfaces	3,000 s. f.	.04	.05	.05
85. Painting, 1 coat on exist. surf	500 s. f.	.04	.03	.04
86. Sta. control for removing lean-to portion	L. S.	2,000.00	2,045.00	3,000.00
87. Sta. control, for new wall	L. S.	2,500.00	1,590.00	3,250.00
88. Remove plumbing work	L. S.	200.00	745.00	318.00
89. Remove exist. railings, etc	L. S.	100.00	650.00	530.00
90. Remove exist. stairway and control railing	L. S.	40.00	600.00	500.00
91. Remove, reset doors	2 ea.	25.00	30.00	50.00
92. Electrical work	L. S.	4,980.00	4,280.00	5,000.00

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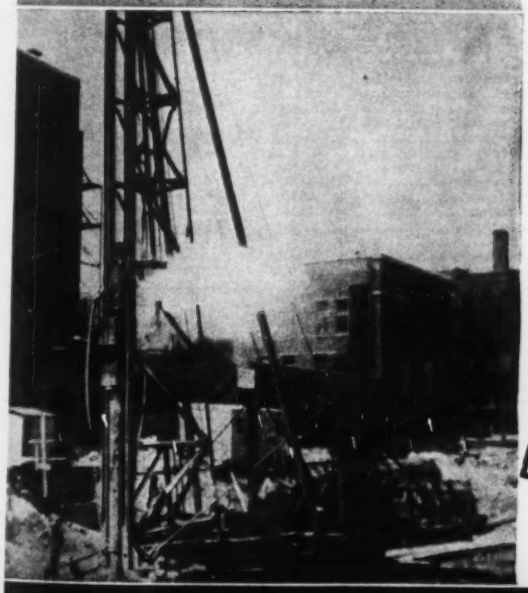

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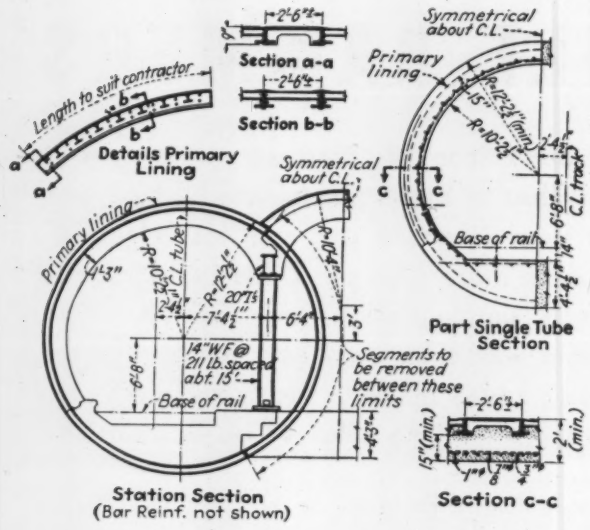
SUBWAY, CHICAGO

OWNER: City of Chicago, Department of Subways and Traction, Edward J. Kelly, Mayor. Ralph H. Burke, Chief Subway Engineer.

PROJECT: Constructing portion of Chicago subway system under South and North State Street, from 11th Street to Chicago River (Contract S-3). Includes approximately 4,050 linear feet of station section; 4,220 linear feet of single-tube section, both of which are shown in the drawing below; and 290 linear feet of special twin-tube section; all constructed in tunnel under compressed air with use of shields. Existing freight tunnels encountered in course of construction to be removed and material disposed of.



CONDITIONS: Contractor to furnish all materials and complete work in 450 calendar days. Wage rates specified are: skilled, $1.05 to $2.00 per hr. in open cut, and $1.42½ to $2.00 in compressed air: semi-skilled, 81¼c. to $1.60 per hr.; and common, 50c. to $1.20 per hr. in open cut, and $1.02½ to $1.35 in tunnels. On marine work, wages range from 99½c. for deck hands to $3.12½ per hr. for divers. Highway, rail, and water transportation facilities available.

BIDS: Three bids were opened August 17, 1939, ranging from the contract low of $8,212,835 to $9,286,000.

LOW BIDDERS:

1. Healy Subway Constr. Co., Chicago, Ill. (contract) $8,212,835
2. Michael Pontarelli & Sons, Chicago, Ill... 8,735,435
3. Griffiths Subway, Inc., Chicago, Ill..... 9,286,000

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Station section	4,050 l. f.	$1,087.00	$1,150.00	$1,310.00
2. Single-tube sect. 20½ ft. ID	4,220 l. f.	545.00	560.00	636.50
3. Spec. twin-tube sect., ea. tube 15 ft. int. width	290 l. f.	1,045.00	1,200.00	900.00
4. Fill concrete	1,000 c. y.	15.00	11.00	10.20
5. Reinforcing steel	7,500,000 lb.	.0375	.04	.036
6. Steel and misc. metals	3,900,000 lb.	.055	.05	.0425
7. C. I. pipe and misc. castings	790,000 lb.	.07	.08	.095
8. Tunnel excav., spec. struct	1,600 c. y.	15.00	13.00	10.00
9. Concrete, tunnel, spec. struct.	1,100 c. y.	22.50	23.00	17.35
10. Steel plate seal	5,000 l. f.	2.20	2.10	1.70
11. Conc. bulkheads, freight tunnel	300 c. y.	55.00	60.00	60.00
12. Timber bulkheads	10 M.b.m.	110.00	150.00	130.00
13. Remove conc. in tunnel	10,000 c. y.	25.00	40.00	11.73
14. Remove timber bulkheads	5 M.b.m.	110.00	115.00	25.00
15. Outlet boxes	1,400 ea.	3.30	3.30	3.65
16. Pull boxes and special boxes	14,000 lb.	.60	.50	.56
17. ¾-in. and smaller rigid galv. electr. conduit	24,000 l. f.	.30	.36	.29
18. 1-in. rigid galv. electr. cond.	48,000 l. f.	.40	.40	.40
19. 1¼-in. rigid galv. electr. cond.	2,400 l. f.	.50	.60	.50
20. 1½-in. rigid, galv. elec. conduit	700 l. f.	.60	.90	.67
21. 2-in. rigid, galv. elec. conduit.	2,800 l. f.	.80	1.70	.92
22. 2½-in. rigid, galv. elec. conduit	200 l. f.	1.00	1.75	1.05
23. 3-in. rigid, galv. elec. conduit.	300 l. f.	1.35	1.80	1.25
24. 3½-in. rigid, galv. elec. conduit	1,900 l. f.	1.50	2.00	1.40
25. Added excav. in tunnel	400 c. y.	5.00	5.00	5.00
26. Added excav., open cut	800 c. y.	2.50	2.50	2.50
27. Rock excavation	100 c. y.	5.00	5.00	5.00
28. Added Cl. A conc., tunnel	400 c. y.	12.00	12.00	12.00
29. Added Cl. A conc., open cut	200 c. y.	10.00	10.00	10.00
30. Grout for stopping leaks	300 bbl.	10.00	10.00	10.00
31. Open cut excav., subway struct	19,000 c. y.	10.25	10.00	11.70
32. Conc., open cut, subway struct	3,400 c. y.	17.00	18.00	14.40

TUNNEL APPROACHES NEW YORK

OWNER: New York City Tunnel Authority, A. B. Jones, chairman; Ole Singstad, chief engineer.

PROJECT: Manhattan surface approach construction consisting of roadways, walls, and incidental structures for entrances and exits of Manhattan plazas of Queens-Midtown Tunnel. Entrance approaches located between First and Second Aves., extending from E. 34 to E. 36 Sts., and from E. 37 to E. 40 Sts. Exits between Second and Third Aves., extending from E. 34 to E. 35, and from E. 37 to E. 41 Sts.

CONDITIONS: All materials to be furnished by contractor and project must be completed in six months. Rail, highway and water transportation facilities available. Wage rates specified are: skilled, $1.40 to $2.12½ per hr.; semi-skilled, 87½c. to $1.25; and common labor, 87½c. per hr.

BIDS: Eleven bids were opened February 27, 1940, ranging from the contract low of $240,015 to $308,920.

LOW BIDDERS:

1. Del Balso Constr. Corp., New York, N. Y... $240,015
2. Reiss & Weinsier, Inc., Brooklyn, N. Y..... 246,964
3. Skolnick Building Corp., New York, N. Y... 249,358

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Earth excav., surf. approach struct.	6,900 c. y.	$0.75	$1.50	$1.00
2. Remove sheet asph. pavement	800 s. y.	.20	.18	1.00
3. Remove granite block pavement	1,950 s. y.	.25	.22	1.00
4. Remove pavement base, and add'l. excavation below base	500 c. y.	1.00	1.40	1.50
5. Remove existing curbs	1,650 l. f.	.10	.22	.30
6. Remove sidewalk; excavation	1,000 c. y.	.75	2.25	2.00
7. Trench excavation	800 c. y.	2.50	2.90	4.00
8. Rock excavation; disposal	100 c. y.	6.00	5.50	12.00
9. Trench excavation in rock	140 c. y.	7.00	9.00	15.00
10. Fill	5,800 c. y.	.25	.55	.50
11. Additional fill	130 c. y.	3.50	4.40	4.00
12. Cement used in conc.	5,800 bbl.	2.20	2.40	2.40
13. Conc. base, surf. appr. pavement	1,600 c. y.	6.00	5.50	6.50
14. 5-in. conc. sidewalks, incl. cinder fill.	830 s. y.	2.00	2.05	2.75
15. 11-in. conc. sidewalks, cinder fill	60 s. y.	2.50	3.00	5.00
16. All other concrete	2,250 c. y.	14.00	9.50	14.00
17. Brick and granite masonry, surf. approach walls	L.S.	65,500.00	74,600.00	63,405.00
18. Brick masonry	130 c. y.	30.00	29.00	25.00
19. Misc. galv. steel	500 lb.	.10	.25	.15
20. Miscellaneous steel	11,000 lb.	.07	.17	.06
21. Reinforcing bars	80 ton	100.00	100.00	100.00
22. Cast-iron castings	12 ton	120.00	160.00	135.00
23. Cast-steel castings	8 ton	350.00	450.00	440.00
24. Dampproofing	780 s. y.	.30	.30	.27
25. Asphalt water stops	330 l. f.	.10	.17	.20
26. Sheet copper water stops	1,500 s. f.	.50	.55	.50
27. 3½-in. 4-way vit. clay ducts, incl. envelope	7,200 duct f.	.30	.75	.33
28. 12-in. vit. pipe conn. and cradles	440 l. f.	2.00	3.00	1.00
29. 4-in. cast iron pipe drains	30 l. f.	2.00	1.60	2.50
30. 6-in. c. i. pipe conn., incl. cradles	150 l. f.	3.00	2.40	3.00
31. 12-in. c. i. pipe conn., incl. cradles	140 l. f.	6.00	5.30	3.50
32. Plastering, receiving basins	700 s. y.	1.00	1.00	1.20
33. 2-in. galv. steel conduit	1,800 l. f.	.65	.75	.67
34. 2-in. galv. steel conduit, incl. envel.	300 l. f.	.85	1.25	.65
35. 2½-in. galv. steel conduit, incl. envel.	2,300 l. f.	1.10	1.10	.80
36. Lighting standards, mercur. vapor	15 ea.	350.00	440.00	356.00
37. Lighting standards, sodium vapor	15 ea.	425.00	500.00	428.00
38. Lighting standards, incandescent	11 ea.	300.00	390.00	280.00
39. Wrought iron gates	6 ea.	150.00	110.00	70.00
40. Chain link fence, on foundations	500 l. f.	3.00	3.00	2.90
41. Chain link fence, conc. walls	400 l. f.	3.00	3.00	2.90
42. Sheet asph. pavemt., excl. conc. base	10,200 s. y.	1.35	1.05	1.30
43. Relay granite pav. block	1,300 s. y.	1.50	2.10	2.00
44. Conc. base, within areas of exist. streets	700 c. y.	6.00	8.50	7.50
45. New conc. sidewalks, incl. fndn.	500 s. y.	2.00	2.20	2.25
46. Colprovia sidewalk, incl. fndn.	40 s. y.	1.50	3.50	1.75
47. Conc. paving, driveways; incl fndn.	100 s. y.	2.00	3.00	2.50
48. Bitum. yard pavmt.; cinder fndn	1,300 s. y.	1.35	2.10	1.95
49. Conc. curbs; steel protectors	700 l. f.	2.00	2.25	3.00

50. Granite headers, with cradles	330 l. f.	1.50	2.50	2.00
51. Reset granite curbs, new cradles	220 l. f.	1.25	2.00	1.50
52. Reset bluestone curb, new cradles	470 l. f.	1.25	1.50	1.20
53. Change location of fire hydrants	2 ea.	150.00	110.00	40.00
54. Furn. 1¼-in. galv. steel conduit	150 l. f.	.25	.70	.25
55. Lay 1¼-in. galv. steel conduit	300 l. f.	.50	.70	.45
56. Furn. 1¼-in. cem. lined steel water pipe	55 l. f.	.50	1.20	1.00
57. Lay 1¼-in. cem. lined steel water pipe	110 l. f.	2.00	.80	.75
58. Underpinning, 311 E. 37 St.	L.S.	500.00	1,500.00	1,500.00
59. Underpinning, 317 E. 37 St.	L.S.	500.00	1,000.00	2,000.00
60. Demolition of 19 structures	L.S.	27,785.00	13,950.00	22,900.00
61. Steel curb protectors	4,000 l. f.	1.25	1.15	1.25
62. ½-in. pre-molded cork joint filler	650 s. f.	.35	.33	.25
63. ½-in. pre-molded cork joint filler	300 s. f.	.45	.42	.35

OUTLET WORKS
OKLAHOMA

OWNER: U. S. Engineer Office, Tulsa, Okla.; Capt. H. A. Montgomery, district engineer.

PROJECT: Construction of uncontrolled weir type concrete spillway and outlet works for Fort Supply reservoir, located on Wolf Creek, Fort Supply, Okla.

CONDITIONS: Contractor to furnish all materials and complete project in 400 working days. Rail and highway transportation facilities available. Job located in "dust bowl" where sandy soil blows badly. Temperature extremes may be encountered. Government owned camp is furnished for use of contractors' employees. Source of aggregates at distance from job. Wages are: skilled, $1.25 per hr.; semi-skilled, 75c.; and common labor, 40c. per hr.

BIDS: Nine bids were opened November 10, 1939, ranging from the contract low of $586,416 to $762,653. Government estimate, $671,887.

LOW BIDDERS:

1. Uvalde Constr. Co., and Keliher Constr. Co., Dallas, Tex. (contract) $586,416
2. Morrison-Knudsen Co., Inc., Los Angeles, Calif. 586,971
3. Western Contracting Co., Sioux City, Iowa 626,509

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cofferdam	L. S.	$18,500.00	$8,500.00	$10,000.00
2. Unclassified excav.	180,000 c. y.	.35	.347	.37
3. Special excavation	2,600 c. y.	1.00	3.50	2.008
4. Trench excavation	1,300 c. y.	3.50	4.80	9.65
5. Excav., borrow area III	50,000 c. y.	.30	.10	.20
6. Foundation protection	700 sq.	1.50	1.00	1.90
7. Backfill	55,000 c. y.	.55	.30	.603
8. Cement	35,000 bbl.	2.50	2.50	3.00
9. Concrete, Class A	10,200 c. y.	10.00	10.25	9.70
10. Concrete, Class B	18,600 c. y.	9.66	11.25	10.80
11. Reinforcing steel	1,700,000 lb.	.044	.04	.04
12. Miscellaneous metal	13,300 lb.	.15	.15	.12
13. Misc. black steel pipe	2,500 lb.	.15	.12	.10
14. Misc. wrought iron pipe	2,400 lb.	.30	.13	.14
15. Misc. cast iron pipe	15,500 lb.	.10	.11	.085
16. Copper water stops	530 lb.	.50	.70	.90
17. Steel water stops, corr.-resist.	3,400 lb.	.45	1.00	.40
18. 42-in. drainage pipe and gate	L. S.	1,000.00	1,600.00	260.00
19. Gravel in drains	11 c. y.	5.00	8.00	5.00

FLOOD WALL, OHIO

OWNER: U. S. Engineer Office, Post Office and Court House Bldg., Cincinnati, Ohio. Major Fred T. Bass, district engineer.

PROJECT: Constructing reinforced concrete flood wall and appurtenant structures, south unit, for protection of low lying portions of city of Ironton, Ohio, against Ohio River floods and high water. Wall approximately 3,175 ft. long; averages 15 ft. high. Involves construction of manholes, gate abutments and sills, gates and gate storage houses.

CONDITIONS: Contractor to furnish all materials except cement, and complete work in 225 calendar days. Rail, highway and water transportation facilities available. City of Ironton furnishes borrow pit satisfactory as source of material for backfilling operations. Wages specified are: skilled labor, 60c. to $1.25 per hr.; semi-skilled, 60 to 80c. per hr.; and common labor, 50 to 55c. per hr.

BIDS: Thirty-three bids were opened February 9, 1940, ranging from the contract low of $148,690 to $328,700.

LOW BIDDERS:

1. Walter H. Mueller, Detroit, Mich. (contract) $148,690
2. Skilken Bros., Columbus, Ohio 156,560
3. J. T. McCarthy, Davenport, Iowa 156,991

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Clear, grub, remove structures	L. S.	$650.00	$1,575.00	$1,135.00
2. Excavation	19,900 c. y.	.65	.81	.32
3. Struct. backfill, compacted	7,600 c. y.	.73	.33	.43
4. Struct. backfill, uncompacted	4,700 c. y.	.75	.22	.32
5. Pipe, sand, coarse aggr. for drain.	3,030 l. f.	2.00	1.30	2.06
6. Concrete	9,200 c. y.	7.90	8.42	8.60
7. Reinforcing steel	1,131,000 c. y.	.0352	.04125	.042
8. 24-in. cast iron pipe	45 l. f.	10.00	16.15	11.00
9. 12-in. cast iron pipe	35 l. f.	3.20	10.90	6.10
10. 10-in. cast iron pipe	192 l. f.	3.60	3.30	4.77
11. 6-in. cast iron pipe	25 l. f.	2.00	3.09	4.00
12. Clay sewer pipe, 10-in.	238 l. f.	.75	.60	1.85
13. 12-in. gate valve	1 ea.	250.00	327.00	215.00
14. 24-in. by 24-in. sluice gate	1 ea.	320.00	548.00	430.00
15. 36-in. by 42-in. sluice gate	1 ea.	650.00	908.00	675.00
16. Gate closure for traffic openings, No. 5	1 ea.	375.00	308.00	665.00
17. As above, for Gate No. 6	1 ea.	375.00	308.00	665.00
18. As above, for Gate No. 7	1 ea.	540.00	364.00	920.00
19. As above, for Gate No. 8	1 ea.	565.00	415.00	920.00
20. As above, for Gate No. 9	1 ea.	540.00	364.00	920.00
21. Doors	3 ea.	125.00	85.50	250.00
22. Handrails	78 l. f.	3.00	2.10	2.15
23. Louvers	9 ea.	15.00	19.50	40.00
24. Miscellaneous metal	12,000 lb.	.12	.0975	.25

FLOOD WALL
MASSACHUSETTS

OWNER: U. S. Engineers, Federal Building, Providence, R. I.

PROJECT: Constructing reinforced concrete flood wall, 2,480 ft. long, approximately 12 ft. high, along east bank of Connecticut River, in south portion of Chicopee, Mass. Steel sheet piling cut-off.

CONDITIONS: Cantilever wall construction requires excellent forms, and there is considerable form work for quantity of concrete involved. Existing sewers require careful work. Contractor to furnish all material. Rail and highway transportation facilities available. Wage rates: Skilled, $1.50; semi-skilled, 62 to 75c. per hr.; and common labor, 56c. per hr. Stipulated contract time, 120 calendar days.

BIDS: Four bids were received June 22, 1939, ranging from the contract low $117,241 to $146,037. Engineer's estimate, $154,958.

LOW BIDDERS:

1. Charles I. Hosmer, Inc., Greenfield, Mass. (contract) $117,241
2. Frank T. Westcott, North Attleboro, Mass. 124,717
3. Lane Constr. Corp., Meriden, Conn. 125,294

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Prepare site	3.9 acre	$300.00	$500.00	$350.00
2. Common excav.	16,300 c. y.	.40	.40	.50
3. Remove existing wall	8 c. y.	5.00	12.00	10.00
4. Steel sheet piling	37,000 s. f.	.90	.90	.90
5. Gravel, pea stone, fltr. sand	2,700 c. y.	2.00	2.50	2.45
6. Compacted backfill	7,800 c. y.	.30	.25	.35
7. Rock fill	2,500 c. y.	2.50	2.00	3.25
8. Riprap, hand placed	3,800 c. y.	4.00	3.50	4.25
9. 8 in. V. C. pipe	750 l. f.	.50	.50	.50
10. 8 in. V. C. pipe, perf.	380 l. f.	.80	.60	.60
11. 12 in. V. C. pipe	710 l. f.	.90	.80	.70
12. 12 in. V. C. pipe, perf.	350 l. f.	1.25	1.00	1.00
13. 12 in. corr. met. pipe, incl. seep rings and flap valve	L. S.	150.00	150.00	250.00
14. Cement	3,800 bbl.	2.50	2.50	2.40
15. Concrete, cl. A	2,770 c. y.	9.35	12.00	9.50
16. Steel reinfore	217,850 lb.	.035	.04	.04
17. Misc. iron and steel	3,550 lb.	.12	.12	.15
18. Copper water stops	1,000 lb.	.45	.40	.50
19. Topsoil	850 c. y.	1.00	1.50	1.50
20. Sod and seed	1.05 acre	300.00	500.00	450.00
21. Close exist. manhole	L. S.	50.00	100.00	150.00

WASTEWAY, WASHINGTON

OWNER: Bureau of Reclamation, Roza Division, Yakima project, Washington. R. F. Walters, Chief Engineer.

PROJECT: Earthwork, concrete lining and structures necessary for construction of 3½ mile Wasteway No. 3, Yakima Ridge Canal, Roza Division, Yakima project, about 10 miles southeast of the city of Yakima, Washington. Involves construction of concrete floor on river bottom where wasteway returns to river, in order to prevent undermining piers of nearby bridge.

CONDITIONS: Owner to furnish cement and reinforcing steel; contractor to furnish all other materials. Highway transportation available. Project to be completed in 400 calendar days. Wages specified are: skilled labor, $1.75 per hr.; semi-skilled, $1.25; and common, 70c. per hr.

BIDS: Five bids were opened July 15, 1939, ranging from the contract low of $158,966 to $247,970.

LOW BIDDERS:

1. H. J. Adler Constr. Co., Yakima, Wash.....$158,966
2. J. A. Terteling & Sons, Boise, Idaho..... 174,061
3. Barnard-Curtis Co., Yakima, Wash..... 178,491

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Common excav., wasteway	170,000 c. y.	$0.20	$0.13	$0.13
2. Rock excav., wasteway	2,000 c. y.	.35	.40	.13
3. Common excav., struct., (except stilling pool and R. R. crossing)	700 c. y.	.75	.75	1.00
4. Rock excav., struct. (except stilling pool and R. R. crossing)	20 c. y.	2.00	1.00	2.00
5. Common excav., stilling pool and R. R. crossing	12,000 c. y.	.25	.60	.50
6. Rock excav., stilling pool and R. R. crossing	50 c. y.	2.00	1.00	.50
7. Overhaul	1,000 sta. y.	.03	.05	.05
8. Compact. embankments	9,000 c. y.	.25	.15	.25
9. Prep. rock found. for conc. lining, rect. sections and transitions	1,000 s. y.	.65	.75	.50
10. Trim earth found. for conc. lining, rect. sections and transitions	52,000 s. y.	.30	.40	.35
11. Backfill	15,500 c. y.	.10	.25	.20
12. Puddle or tamp. backfill	2,000 c. y.	.40	.70	.45
13. Conc., structures (except stilling pool and R. R. crossing)	453 c. y.	13.00	16.50	26.00
14. Conc., stilling pool and R. R. crossing	825 c. y.	12.00	17.00	17.25
15. Conc., rectangular sec. and transitions	2,220 c. y.	11.30	13.00	12.50
16. Concrete in conc. lining	5,100 c. y.	7.00	8.00	8.50
17. Reinf. bars	800,000 lbs.	.015	.015	.02
18. Dry rock paving	400 s. y.	2.00	1.00	2.00
19. Erecting timber, struct	10 M b.m.	23.00	20.00	30.00
20. Install. 8-and 10-in. metal pipe	1,050 lbs.	.05	.04	.05
21. Install. 16-and 18-in. metal pipe	2,500 lbs.	.05	.04	.10
22. Constr. 6-in. underdr., uncemented joints	12,000 l. f.	.65	.50	.60
23. Lay. 6-in. sew. pipe cemented joints	3,000 l. f.	.30	.30	.35
24. Install. gates, gate hoists	27,500 lb.	.04	.03	.05
25. Install. misc. metalwork	1,200 lb.	.10	.05	.10
26. Install. elect. metal conduit	150 l. f.	.10	.25	.50
27. Install. elect. conductors and ground wire	35 lb.	.10	.50	1.00

WASTEWAY CHANNELS, IDAHO

OWNER: Bureau of Reclamation, Boise Project, Idaho. R. J. Newell, construction engineer.

PROJECT: Earthwork and structures for Tunnel No. 2 wasteway and Tunnel No. 7 wasteway, Black Canyon Canal, Payette Division, Boise Project, Idaho. Work located from about 2 miles south to six miles west of Emmett, Idaho.

CONDITIONS: Government to furnish cement, sand, rock (except for dry-rock paving), reinforcing bars, concrete pipe, lumber for permanent installations, metalwork, piling, corrugated metal pipe and sewer pipe. Contractor to furnish all other materials. Temporary construction required to support railroad tracks during construction of permanent structures will be provided by Government. Existing structures should be carefully dismantled in order to re-use some materials. Where wasteway channels cross streams, care must be taken that no damage is done to public or private interests. Rail (U.P.R.R.) and highway transportation available. Contract time, 200 calendar days. Wage rates: skilled, 90c. to $1.20 per hr.; semi-skilled, 65 to 75c. per hr.; and common, 50c. per hr.

BIDS: Four bids were opened July 17, 1939, ranging from the low of $119,843 to $171,948.

LOW BIDDERS:

1. Henry L. Horn, Caldwell, Idaho.....$119,843
2. David A. Richardson, Caldwell, Idaho..... 121,072
3. J. A. Terteling & Sons, Boise, Idaho..... 127,022

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Excavation, wasteways	400,000 c. y.	$0.07	$0.085	$0.075
2. Excavation, structures	10,000 c. y.	.45	1.00	.70
3. Overhaul	8,000 sta. c. y.	.03	.035	.05
4. Backfill, structures	10,000 c. y.	.10	.12	.12
5. Tamp backfill, struct	2,000 c. y.	.15	.30	.30
6. Concrete, structures	4,350 c. y.	16.00	12.30	16.15
7. Reinforcing bars	536,000 lb.	.015	.015	.015
8. Dry-rock paving	2,500 s. y.	1.40	1.20	1.50
9. Drive timber piles	650 l. f.	1.00	2.00	1.00
10. Erect timber, struct	167 M bm.	12.00	13.00	15.00
11. 36-in. lock-joint conc. pipe	90 l. f.	1.20	5.00	1.50
12. 10-in. corr. met. pipe	80 l. f.	.25	1.00	.15
13. 12-in. corr. met. pipe	2,500 l. f.	.25	.30	.15
14. 24-in. corr. met. pipe	40 l. f.	.40	2.00	.25
15. 36-in. corr. met. pipe	40 l. f.	.75	2.00	.50
16. 6-in. underdrain, uncem't. jts.	1,125 l. f.	.07	.45	.50
17. Erect No. 36 metal flume	260 l. f.	.75	2.00	1.50
18. Erect No. 42 metal flume	120 l. f.	.90	3.00	2.00
19. Erect No. 84 metal flume	60 l. f.	1.00	3.00	3.00
20. Install misc. metalwork	100 lb.	.03	.20	.05
21. Remove, salvage c.m.p., struct	1,500 l. f.	.25	1.00	.10
22. Remove, salvage metalwork in existing flumes	450 l. f.	.20	1.00	.10
23. Remove structs. salvage reusable mat'l. except Items 21 and 22	L.S.	300.00	2,000.00	500.00

SEAWALL, CORPUS CHRISTI

OWNER: City of Corpus Christi, Texas; J. C. Bisset, city engineer; Myers, Noyes & Forrest, Tower Petroleum Bldg., Dallas, consulting engineers.

PROJECT: Construction of a seawall from a point on the turning basin south to Craig St. in Corpus Christi. Of concrete and steel, with some rock work, the wall is about 18,000 ft. long and 32 ft. high. Stipulated contract time is 18 months. Transportation by rail, highway and water is available. Foundation conditions are uncertain due to shifting sand.

BIDS: Four bidders submitted bids on both PWA and non-PWA basis Dec. 29, 1938. As the contract was awarded on a non-PWA basis, the following unit prices cover this phase of the bidding only.

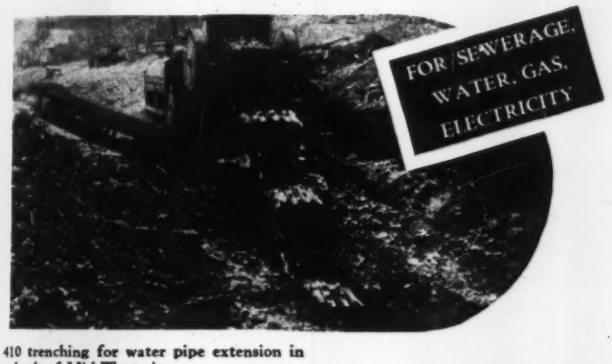
LOW BIDDERS:

1. Jay DePuy, San Antonio (contract)..... $1,616,472
2. Horace Williams Co., Inc., New Orleans.. 1,958,980
3. H. B. Zachry Co., Laredo, Tex..... 1,973,234

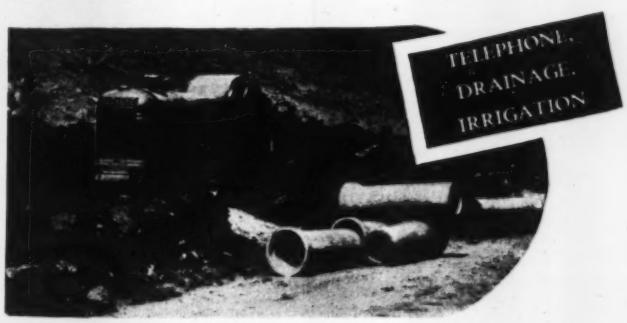
Item	Quan.	Unit Prices (1)	(2)	(3)
1. Cl. "A" conc. in sea wall, north of step section	1,365 c. y.	15.00	25.00	20.50
2. Cl. "A" conc. in sea wall, step section	17,453 c. y.	13.00	20.00	18.50
3. Cl. "A" conc. in sea wall, south of step section	715 c. y.	11.00	20.00	14.50
4. Cl. "A" conc. in pressure storm sewer	2,120 c. y.	44.00	27.00	26.50
5. Cl. "A" conc. in municipal wharf.	704 c. y.	16.00	35.00	20.50
6. Cl. "A" conc. on yacht basin piers.	1,045 c. y.	14.00	22.00	20.50
7. Cl. "A" conc. in backwater levee struct	147 c. y.	23.00	25.00	20.00
8. Cl. "A" conc. in gravity storm sewers	230 c. y.	15.00	25.00	24.00
9. Cl. "B" conc. in splash areas	5,727 c. y.	10.00	14.00	10.00
10. Cl. "B" conc. in pavement base	52,790 s. y.	1.55	1.40	1.55
11. Combined curb & gutter	21,412 l. f.	.70	.80	.70
12. Cl. "B" conc. in inlets, etc	420 c. y.	25.00	22.00	19.00
13. Cl. "C" conc. in cradle for sewers.	1,396 c. y.	10.00	16.00	18.00
14. 8-in. precast con. pipe in storm sewers	455 l. f.	0.35	0.40	2.75
15. 15-in. precast con. pipe in storm sewers	2,812 l. f.	1.05	1.10	3.60
16. 18-in. precast con. pipe in storm sewers	2,826 l. f.	1.35	2.00	4.35
17. 21-in. precast conc. pipe in storm sewers	2,180 l. f.	1.90	2.50	5.00
18. 24-in. precast conc. pipe in storm sewers	1,238 l. f.	2.30	3.00	5.40
19. 30-in. precast conc. pipe in storm sewers	6,246 l. f.	3.25	4.00	6.30

It's a Go Gettin' Trencher

The New 410 Buckeye Ditcher is Making Trenching History



410 trenching for water pipe extension in suburb of Mid-West city.



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It's a contractor's trencher. Small and light—easy to transport—less than 8′ wide, less than 7′ high. Squeezes between buildings, in narrow alleys, digs close to curbs and foundations; clears low branches. Only 6 lbs. ground pressure per sq. inch—easy on lawns and walks. Hydraulically controlled boom digs to 6′ deep (7′6″ optional); makes trenches up to 24″ wide; undercuts service pipe, driveways, etc. All controls in easy reach of operator. It's the *smallest* trencher for its capacity ever built!

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Distributors in All Principal Cities

20. 36-in. precast conc. pipe in storm sewers	1,656 l. f.	4.05	5.00	8.00
21. Reinf	2,230,700 lb.	.35	.043	.04
22. Steel sheet piling in sea wall north of step section	1,098,500 lb.	.045	.050	.0341
23. Steel sheet piling in sea wall step section	3,858,600 lb.	.045	.045	.0341
24. Steel sheet piling in sea wall south of step section	205,700 lb.	.035	.045	.0341
25. Steel sheet piling in municipal wharf	1,948,500 lb.	.035	.050	.0342
26. Steel sheet piling in yacht basin piers	3,146,000 lb.	.035	.0425	.0343
27. Struct. steel	898,000 lb.	.0565	.085	.062
28. 8-in. sluice gates	1 ea.	15.00	30.00	35.00
29. 18-in. sluice gates	2 ea.	41.00	65.00	50.00
30. 21-in. sluice gates	6 ea.	47.00	75.00	60.00
31. 24-in. sluice gates	8 ea.	57.00	85.00	70.00
32. 30-in. sluice gates	22 ea.	95.00	150.00	100.00
33. 36-in. sluice gates	8 ea.	150.00	250.00	150.00
34. 42-in. sluice gates	2 ea.	220.00	400.00	225.00
35. 36-in. square sluice gates	1 ea.	350.00	300.00	325.00
36. Manhole & inlet castings	42,500 lb.	.0375	0.10	.08
37. Precast conc. piling 14-in. square	49,270 l. f.	2.50	1.20	2.60
38. Precast conc. piling 16-in. square	22,512 l. f.	2.70	1.50	3.25
39. Creosoted timber piling	74,782 l. f.	2.10	1.00	1.95
40. Creosoted timber	5M. b.m.	100.00	150.00	110.00
41. Untr. lumber	48.M b.m.	35.00	75.00	80.00
42. Mooring posts	460 ea.	1.00	5.00	30.00
43. Asphalt pav. surf	52,790 s. y.	0.55	0.45	0.55
44. Caliche surf	5,140 c. y.	2.10	2.50	2.10
45. Mud-shell surf	5,140 c. y.	1.75	1.50	1.75
46. Wood posts for sewer cradle	1,212 ea.	1.75	2.00	1.25
47. Hydraulic fill	2,711,784 c. y.	.085	0.12	0.14
48. Levee fill	22,000 c. y.	.38	1.00	.41
49. Raising structures	L. S.	30,000.00	40,000.00	60,000.00
50. Top soil	7,650 c. y.	1.75	1.00	1.75
51. Sodding	31,900 s. y.	.10	.05	0.10
52. Fertilizer	6 tons	50.00	40.00	50.00

PRESSURE CULVERT PENNSYLVANIA

OWNER: U. S. Engineer Office, Baltimore, Md.

PROJECT: Construction of flood-control pressure culvert, Kingston-Edwardsville, Pa., on Toby Creek in Kingston and Pringle Boroughs, Luzerne County. Culvert 16½ ft. in diameter, 675 ft. long. Project involves construction of entrance structures, stilling basin, sidewalls, spillway, and sewer diversion.

CONDITIONS: Contractor to furnish all materials except ready-mixed concrete, crushed stone backfilling, derrick stone, crushed stone filters and 36-in. clay pipe, which is to be furnished by Government. Project to be completed in 400 days. Rail and highway transportation available. Wages on project are: skilled labor, $1.12½ to $1.50 per hr.; semi-skilled, 65 to 75c. per hr.; and common labor, 60c. per hr.

BIDS: Eight bids were received September 25, 1939, ranging from the contract low of $311,181 to $524,329. Engineer's estimate, $471,381.

LOW BIDDERS:

1. Ralph Myers, Salem, Ind. (contract) $311,181
2. J. F. Fitzgerald Constr. Co., Boston, Mass.... 313,320
3. The Holmes Constr. Co., Wooster, Ohio..... 314,580

		Unit Prices		
Item	Quan.	(1)	(2)	(3)
1. Divert and care of water	L.S.	$9,500.00	$3,000.00	$23,658.00
2. Remove existing struct., clear site	L.S.	7,000.00	7,000.00	11,000.00
3. Maintain traffic	L.S.	500.00	1,500.00	5,000.00
4. Structure excavation	55,000 c. y.	.45	1.15	.84
5. Trench excavation	2,500 c. y.	1.50	2.00	.64
6. Stripping	17,000 c. y.	.20	.45	.50
7. Borrow excav., impervious	50,000 c. y.	.18	.35	.29
8. Borrow excav., pervious	138,000 c. y.	.16	.30	.28
9. Structure backfill	21,000 c. y.	.40	.25	.35
10. Trench backfill	2,000 c. y.	.60	.50	.40
11. Levee fill, impervious	17,000 c. y.	.18	.30	.15
12. Levee fill, pervious	145,000 c. y.	.15	.10	.15
13. Impervious blanket	28,000 c. y.	.15	.12	.15
14. Rolling, ea. add'l. trip	10,000 sq.	.02	.06	.04
15. Miscellaneous fill	15,000 c. y.	.20	.25	.40
16. Riprap (gov't.)	6,000 c. y.	1.25	2.00	3.34
17. Cr. Stone backing (gov't.)	3,200 c. y.	.60	.50	.65
18. Derrick stone (gov't.)	115 c. y.	4.00	2.00	3.00
19. Concrete (gov't., ready-mix)	7,140 c. y.	16.40	7.40	6.00
20. Reinforcing steel	1,155,000 lb.	.045	.05	.04
21. Copper water stops	2,340 lb.	.50	.60	.64
22. Bronze settlement gag. bolts	3 lb.	1.50	1.00	2.60
23. Steel pipe, settlement gages	20 l. f.	5.00	2.00	.50
24. 12-in. corr. iron pipe	70 l. f.	2.00	2.00	1.60
25. 15-in. clay pipe line	20 l. f.	3.00	.90	1.80
26. 18-in. clay pipe line	870 l. f.	2.50	1.20	2.30
27. 21-in. clay pipe line	570 l. f.	3.00	2.30	3.10
28. 24-in. cast iron pipe	250 l. f.	8.00	8.00	8.50
29. 30-in. cast iron pipe	120 l. f.	10.50	10.00	12.00
30. 36-in. clay pipe line (govt.)	500 l. f.	2.00	.50	1.90
31. Clay liner plates	850 s. f.	.60	1.00	.50
32. Iron castings	5,700 lb.	.05	.12	.08
33. Cr. stone filters (gov't.)	50 c. y.	.50	2.00	2.00

CHANNEL IMPROVEMENTS NEW YORK

OWNER: U. S. Engineers, Security Mutual Building, Binghamton, N. Y. Major G. J. Nold, district engineer.

PROJECT: Hornell Channel Improvement project (Middle Section) is located mainly within city limits of Hornell, Steuben County, New York, and consists of channel excavation for widening, deepening and straightening of Canisteo River, Canacadea Creek and Chauncey Run; construction of levee embankments; construction, alteration and removal of bridges, concrete and stone walls; concrete channel paving; concrete crib retaining walls; concrete drop structures; construction and alteration of sewers; and rock protection work.

CONDITIONS: Local relief labor to be employed so far as practicable. Contractor to furnish all materials. Work to start 10 days after notice of award, and to be completed in 900 calendar days. Railway and highway transportation facilities available. Minimum wage rates on the project are: common, 50 to 60c. per hr.; semi-skilled, 60 to 75c. per hr.; and skilled, 75 to $1.375 per hr.

BIDS: Seven bids were received July 10, 1939, ranging from the low of $1,466,560 to $2,132,153. Engineer's estimate, $1,514,853.

LOW BIDDERS:

1. Spencer & Ross, Inc., Detroit, Mich..... $1,466,560
2. Collins Bros., Mechanicville, N. Y..... 1,665,252
3. Cold Springs Constr. Co., Akron, N. Y., and Hornell Constr. Co., Hornell, N. Y..... 1,696,315

		Unit Prices		
Item	Quan.	(1)	(2)	(3)
1. Clear and grub	L. S.	$15,000.00	$40,000.00	$10,000.00
2. Strip, levee found	25,000 c. y.	.40	.40	.50
3. Landscape grading	1,500 c. y.	.75	1.00	1.00
4. Excav. channel	425,000 c. y.	.40	.50	.45
5. Excav. structural	58,000 c. y.	.50	1.00	1.00
6. Excav. insp. trench	22,000 c. y.	.40	.60	.40
7. Excav. culv., sew., tren	3,000 c. y.	1.00	1.00	3.00
8. Excav. rock	1,000 c. y.	2.25	2.00	2.00
9. Overhaul (over 3,000 ft.)	1,250,000 sta. y.	.005	.005	.005
10. Remove wall and brdg. abutments (masonry)	700 c. y.	5.00	1.50	2.00
11. Remove wall and brdg. abutments (conc.)	2,500 c. y.	5.00	6.00	3.00
12. Remove steel sheet piling	2,500 s. f.	.75	.40	.50
13. Sheeting, incl. shoring	27,000 s. f.	.60	.75	.30
14. Struct. backfill, compact	48,000 c. y.	.10	.70	.60
15. Struct. backfill, uncomp	3,000 c. y.	.05	.40	.60
16. Embankment	262,000 c. y.	.02	.12	.20
17. Additional rolling	2,500 M s. f.	.02	.02	.02
18. Topsoil placing	10,000 c. y.	.30	.60	.50
19. Topsoil, furn. and pl	5,000 c. y.	1.25	1.50	1.25
20. Seeding	20 ac.	40.00	150.00	250.00
21. Riprap, dumped	8,600 c. y.	4.00	4.50	5.00
22. Rock paving, hand	7,000 c. y.	6.00	7.00	10.00
23. Derick stone	1,300 c. y.	7.00	6.00	6.00
24. Grout, gut. and rock pav	400 c. f.	1.50	8.50	.75
25. Gravel, back and drain	5,000 c. y.	3.00	2.00	3.00
26. Chip, conc. or masonry	1,500 c. f.	2.00	1.00	1.00
27. Class A concrete	17,000 c. y.	17.00	18.25	22.00
28. Class B concrete	2,500 c. y.	14.00	16.00	17.00
29. Concrete paving	27,000 c. y.	11.00	13.00	14.00
30. Conc. misc. struct	300 c. y.	25.00	15.00	20.00
31. Conc. crib walls	830 c. y.	40.00	38.00	34.00
32. Conc., dumped riprap	460 c. y.	10.00	12.00	15.00
33. Timber piling	6,000 l. f.	1.00	.90	.75
34. Sheet steel piling	22,000 s. f.	1.50	1.50	1.20
35. Drill holes, stone or conc	8,500 l. f.	.30	.60	.50
36. Expans. anchors	1,000 ea.	3.00	.60	.50
37. Reinforcing	3,100,000 lb.	.04	.05	.04
38. Remove bridge, Church St	L. S.	10,000.00	800.00	500.00
39. Remove Bennett St. bridge	L. S.	10,000.00	800.00	500.00
40. Remove River St. bridge	L. S.	20,000.00	8,000.00	6,000.00
41. Remove Erie RR bridge	L. S.	10,000.00	800.00	500.00
42. Remove PS&N RR bridge	L. S.	15,000.00	800.00	1,000.00
43. Struct. steel, bridge	410,000 lb.	.06	.065	.065
44. River St. bridge deck	L. S.	15,000.00	6,000.00	9,000.00
45. Bennett St. bridge deck	L. S.	2,500.00	2,500.00	3,200.00
46. Erie RR bridge deck	L. S.	1,500.00	500.00	500.00
47. Raise Seneca St. bridge	L. S.	10,000.00	4,000.00	2,500.00
48. Raise Main St. bridge	L. S.	10,000.00	4,000.00	2,500.00
49. Raise East Elm St. bridge	L. S.	5,000.00	3,000.00	1,500.00
50. Raise Cedar St. bridge	L. S.	7,500.00	5,000.00	4,000.00
51. Misc. metal work	15,000 lb.	.20	.17	.20
52. Wrt. iron pipe hd'rail	350 l. f.	3.00	3.00	4.50
53. Copper	8,700 lb.	.50	.60	.50
54. Cast iron pipe	17,000 lb.	.20	.05	.06
55. Auto. drain. gates, 8-in	5 ea.	40.00	20.00	30.00

56. Auto. drain. gates, 10-in.	4 ea.	45.00	22.00	32.00
57. Auto. drain. gates, 12-in.	5 ea.	50.00	23.50	35.00
58. Auto. drain. gates, 15-in.	3 ea.	60.00	30.00	40.00
59. Auto. drain. gates, 18-in.	2 ea.	70.00	42.00	55.00
60. Auto. drain. gates, 21-in.	1 ea.	80.00	50.00	60.00
61. Auto. drain. gates, 24-in.	9 ea.	100.00	55.00	65.00
62. Auto. drain. gates, 30-in.	1 ea.	125.00	75.00	100.00
63. Auto. drain. gates, 36-in.	4 ea.	200.00	105.00	130.00
64. Check valve, 6-in.	3 ea.	60.00	35.00	30.00
65. Sluice gate, 36x48-in.	1 ea.	1,000.00	850.00	1,200.00
66. Corr. met. pipe, 6-in.	150 l. f.	1.70	2.00	1.75
67. Corr. met. pipe, 8-in.	200 l. f.	2.00	2.20	1.90
68. Corr. met. pipe, 10-in.	100 l. f.	2.25	2.40	2.10
69. Corr. met. pipe, 12-in.	100 l. f.	3.00	2.60	3.00
70. Corr. met. pipe, 15-in.	250 l. f.	3.50	3.50	3.50
71. Corr. met. pipe, 18-in.	350 l. f.	5.00	4.20	4.50
72. Corr. met. pipe, 21-in.	100 l. f.	6.00	5.00	5.00
73. Corr. met. pipe, 24-in.	800 l. f.	8.00	6.20	8.00
74. Corr. met. pipe, 30-in.	100 l. f.	12.00	8.10	10.00
75. Corr. met. pipe, 36-in.	250 l. f.	15.00	13.00	14.00
76. Tile or conc. pipe, 6-in.	100 l. f.	.50	.40	.50
77. Tile or conc. pipe, 8-in.	100 l. f.	.60	.60	.60
78. Tile or conc. pipe, 10-in.	250 l. f.	.80	.88	1.00
79. Tile or conc. pipe, 12-in.	150 l. f.	1.00	1.15	1.25
80. Tile or conc. pipe, 15-in.	100 l. f.	1.50	1.50	1.75
81. Tile or conc. pipe, 18-in.	100 l. f.	2.00	2.20	2.25
82. Tile or conc. pipe, 21-in.	100 l. f.	3.00	3.50	3.00
83. Tile or conc. pipe, 24-in.	100 l. f.	4.00	4.00	3.50
84. Recon. and inst. auto. drainage gates	10 ea.	30.00	100.00	50.00
85. Recon., relay 6-10-in. pipe	250 l. f.	1.00	.40	.75
86. Recon., relay 12-24-in. pipe	600 l. f.	1.50	1.00	1.50
87. Recon., relay 27-36-in. pipe	200 l. f.	2.00	3.00	2.50
88. Farm drain tile, 8-in.	2,500 l. f.	.50	.40	.50
89. Farm drain tile, 12-in.	3,300 l. f.	.60	.75	.80
90. Fiber pipe, 3-in.	1,400 l. f.	.30	.50	.30
91. Replac. pavmt., East Ave.	L. S.	3,000.00	4,000.00	4,000.00
92. Road surf., gravel	1,500 c. y.	2.00	1.50	3.50
93. Road surf., bituminous	7,000 gal.	.15	.12	.12
94. Hwy guard rail	4,300 l. f.	.75	.75	1.15
95. Sew. excav., incl backfill	7,100 c. y.	2.50	1.00	3.00
96. Conc. pipe for sewer, 30-in.	625 l. f.	5.00	8.00	4.00
97. Conc. pipe for sewer, 24-in.	620 l. f.	3.50	5.00	2.75
98. Conc. pipe for sewer, 21-in.	1,600 l. f.	2.50	4.00	2.25
99. Conc. pipe for sewer, 12-in.	350 l. f.	1.00	2.00	1.30
100. Lateral, sub-main conn.	10 ea.	50.00	10.00	10.00
101. Fur. and jack casing under RR fill	120 l. f.	25.00	100.00	30.00
102. C.I. pipe, under RR	53,000 lb.	.10	.05	.04
103. Manholes, complete	12 ea.	100.00	200.00	100.00

CHANNEL IMPROVEMENTS, PENNSYLVANIA

OWNER: U. S. Engineer Office, Pittsburgh, Pa.

PROJECT: Improving channel of Conemaugh, Little Conemaugh Rivers, and Stony Creek (Third Unit), located in Johnstown, Pa., and vicinity. Involves widening, deepening and realigning chanels of rivers and creek; pavement and wall protection of banks of improved channel; alterations to existing pipe outlets; relocation of sewer siphon; relocation of cast iron water pipe lines; protection of existing bridge piers; remodel Minersville pumping station and add new bay.

CONDITIONS: All materials in good condition salvaged from pumping station and water pipe lines may be re-used. Work to be completed in 300 calendar days after notice to proceed. Pennsylvania, and Baltimore & Ohio, and privately owned railroad systems, as well as streets in Johnstown available for transportation of material and equipment. Materials to be furnished by contractor. Minimum wage rates specified are: skilled, $1.30 to $1.40 per hr.; semi-skilled, 75c to $1.00 per hr.; and common, 65c. to 70c. per hr.

BIDS: Six bids were received Sept. 11, 1939, ranging from the contract low of $1,314,437 to $1,845,446. Engineer's estimate $1,437,055.

LOW BIDDERS:

1. E. J. Albrecht Co., Chicago, Ill. (contract) $1,314,437
2. Al Johnson Constr. Co., Minneapolis, Minn. 1,494,805
3. Harrison Constr. Co., Pittsburgh, Pa. 1,551,202

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Remove existing struct.	L. S.	$3,000.00	$7,000.00	$15,200.00
2. Common excavation	660,000 c. y.	.66	.62	.90
3. Rock excavation	23,000 c. y.	1.40	2.50	1.50
4. Special excavation	35,000 c. y.	1.25	2.00	2.00
5. Spec. rock excavation	6,300 c. y.	7.00	8.50	10.00
6. Uncompacted fill	800 c. y.	.10	.20	.10
7. Compacted fill	34,000 c. y.	.25	.50	.20
8. Gravel backing	13,200 c. y.	2.75	3.00	2.85
9. Rock fill	6,000 c. y.	.75	1.50	1.50
10. Concrete	31,500 c. y.	10.50	13.00	11.00
11. Fur. and place reinf. steel	1,810,000 lb.	.04	.045	.042
12. Furnish cement	40,000 bbl.	2.00	3.00	2.60
13. Copper water stops	50 lb.	1.00	2.00	1.00
14. Relocate sewer siphon	L. S.	34,260.00	40,000.00	23,000.00
15. 33-in. vitr. tile pipe or rein. conc. pipe	980 l. f.	10.00	14.00	6.00
16. 36-in. vitr. tile pipe or rein. conc. pipe	450 l. f.	11.00	14.50	7.50
17. Alter exist culv. and drains	L. S.	15,000.00	10,000.00	13,000.00
18. Fur. and install flap valves	5 ea.	20.00	40.00	35.00
19. Drill 2 and 3-in. holes	590 l. f.	1.75	3.00	2.00
20. Black steel pipe	530 lb.	.20	.50	.11
21. Grouting	1,800 c. f.	2.00	1.30	1.00
22. Fur, new c. i. pipe, fit., specs.	1,543,000 lb.	.04	.035	.04
23. Inst. 12-in. c. i. pipe	240 l. f.	15.00	15.00	12.00
24. Inst. 24-in. c. i. pipe	330 l. f.	20.00	16.00	20.00
25. Inst. 36-in. c. i. pipe	2,665 l. f.	8.00	10.00	9.00
26. Remove 12-in. c. i. pipe	240 l. f.	5.00	1.50	2.00
27. Remove 24-in. c. i. pipe	250 l. f.	7.00	2.50	3.00
28. Remove 36-in. c. i. pipe	2,760 l. f.	4.00	3.00	4.50
29. Pipe railing	710 l. f.	3.00	3.00	3.00
30. Alter Minersville Pumping Station	L. S.	45,000.00	45,000.00	35,000.00

LEVEE WORK, CALIFORNIA

OWNER: U. S. Engineer Office, 208 Post Office Bldg., Sacramento, Calif.

PROJECT: Enlarging, raising, strengthening and setting back existing levees along West levee of Feather River from Shanghai Bend south to Starr Bend; enlarging, raising and strengthening along West levee 2 miles southerly from Starr Bend to opposite Bear River.

CONDITIONS: Materials to be furnished by contractor and both parts of job to be completed by Oct. 31, 1940. Wage rates specified are: skilled, $1.10 to $1.50 per hr.; semi-skilled, 77 to 90c.; and common, 62½c. per hr.

BIDS: Work was divided into two parts, Part A from Shanghai Bend to Starr Bend, and Part B from Starr Bend to Bear River. Two bids were received on Part A, $363,362 and $375,215. Five bids were received on Part B, ranging from $96,979 to $112,049. Contract was awarded, however, on combination bid of $430,298 to low bidder. Five bids on combination were opened December 5, 1939. High was $708,193.

LOW BIDDERS:

1. Morrison-Knudsen Co., Inc., Los Angeles, Calif. (contract) $430,298
2. Hemstreet & Bell, Marysville, Calif. 454,149
3. Granfield, Farrar & Carlin, San Francisco, Calif. 511,179

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Levee embankment	2,299,000 c. y.	$0.1675	$0.172	$0.195
2. Water	66,380 M gal	.50	.70	.75
3. Road gravel	1,650 c. y.	1.75	2.00	1.75
4. Class A concrete	52 c. y.	30.00	25.00	30.00
5. Reinforcing steel	4,400 lb.	.08	.05	.06
6. Timber	300 f. bm.	.10	.08	.10
7. 6-in. steel pipe	170 l. f.	1.20	1.50	1.25
8. 8-in. steel pipe	1,030 l. f.	1.50	1.80	1.50
9. 24-in. steel pipe	122 l. f.	4.50	4.00	4.50
10. 36-in. steel pipe	48 l. f.	12.50	13.00	12.50
11. Corr. iron pipe, 16-ga., 18-in.	120 l. f.	2.25	2.80	2.50
12. Corr. iron pipe, 12-ga., 36-in.	90 l. f.	7.00	6.80	8.00
13. Corr. iron pipe, 10-ga., 60 in.	60 l. f.	15.00	14.00	15.00
14. 24-in. air valve covers	7 ea.	14.00	15.00	15.00
15. 24-in. air valve covers	2 ea.	16.50	17.00	20.00
16. 30-in. irrigation gates	4 ea.	55.00	50.00	70.00
17. 30-in. lateral head gates	4 ea.	43.00	40.00	40.00
18. Iron cut-off plates, 3 x 4-ft. by ¾-in.	7 ea.	13.00	13.00	15.00
19. Iron cut-off plates, 3½ x 4-ft. by ¾-in.	1 ea.	15.00	15.00	20.00
20. Iron cut-off plates, 4½ x 5-ft. by ¾-in.	1 ea.	21.00	20.00	25.00
21. 1-in. brass cocks	7 ea.	2.00	2.00	2.50
22. 2-in. brass cocks	2 ea.	5.50	7.50	7.00
23. 1-in. air valves	7 ea.	29.00	25.00	25.00
24. 2-in. air valves	2 ea.	55.00	50.00	50.00
25. Remove, save 12-in. iron pipe, etc.	L.S.	95.00	150.00	300.00
26. Remove conc. pipe saddles, etc.	L.S.	350.00	200.00	450.00
27. Remove 12-in. pipe and gate	L.S.	65.00	50.00	100.00
28. Remove, save 6, 8 and 10-in. pipe	L.S.	100.00	250.00	200.00
29. Remove, save 24-in. pipe	L.S.	225.00	200.00	250.00
30. Remove 24-in. pipe	L.S.	25.00	50.00	60.00
31. Remove, save 190-ft steel pipe, etc.	L.S.	125.00	250.00	150.00
32. Remove conc. cut-off walls, etc.	L.S.	400.00	300.00	800.00
33. Remove comb. conc. and wood culv.	L.S.	125.00	50.00	170.00

LEVEES, KENTUCKY

OWNER: U. S. Engineer Office, Louisville, Ky.

PROJECT: Construction of earth levees, drainage structures, toe drains, and movable closure structures in northwestern part of Paducah, Ky., on left bank of Ohio River. Protection works start near intersection of Sixth and Burnett Streets, extend in westerly direction to point on Illinois Central R.R., east of Perkins Creek, thence in southerly direction to point on 32nd Street, west of Boswell Road.

CONDITIONS: Contractor to furnish all materials, and complete project in 500 calendar days excluding time lost for flooding or rains. Borrow areas for embankment construction will be furnished without cost to contractor. Wage rates: skilled, $1.00 to $1.25 per hr.; semi-skilled, 50 to 75c. per hr.; and common, 40c. per hr. Rail, water and highway transportation available.

BIDS: Seven bids were opened July 7, 1939, ranging from contract low of $140,237 to $181,457.

LOW BIDDERS:

1. L. O. Brayton & Co., Dyersburg, Tenn. (contract) $140,237
2. Hart & Hart, Columbus, Ind..... 148,878
3. Hodgkin-Adams Co., Inc., Winchester, Ky.... 152,874

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Levee embankment	388,400 c. y.	$0.205	$0.23	$0.22
2. Rolling (3 add'l passes)	30,000 sq.	.01	.0025	.02
3. Concrete	475 c. y.	25.00	20.50	25.00
4. Reinforcing steel	29,200 lb.	.05	.045	.05
5. Miscellaneous metal	2,120 lb.	.20	.022	.15
6. 12-in. corr. iron pipe	67 l. f.	2.00	1.72	2.00
7. 24-in. corr. iron pipe	459 l. f.	3.50	3.60	3.50
8. 30-in. corr. iron pipe	134 l. f.	5.50	5.88	6.50
9. 60-in. corr. iron pipe	318 l. f.	15.00	17.35	18.00
10. 72-in. corr. iron pipe	197 l. f.	20.00	21.30	22.00
11. Seep ring, corr. iron, No. 10 Ga.	2,180 s. f.	1.50	1.25	1.50
12. Flood gate, 24-in.	3 ea.	90.00	58.00	100.00
13. Flood gate, 30-in.	1 ea.	150.00	103.00	150.00
14. Flood gate, 60-in.	2 ea.	600.00	550.00	600.00
15. Flood gate, 72-in.	1 ea.	725.00	600.00	800.00
16. Riprap, hand placed	130 c. y.	6.00	7.45	7.00
17. Gravel blanket	80 c. y.	3.00	2.10	3.00
18. Common excavation	1,100 c. y.	.75	.45	.50
19. Backfill, compacted	1,120 yd.	1.50	.75	1.30
20. 8-in. toe drain, 4–6-ft.	4,455 l. f.	1.00	1.15	1.50
21. 8-in. toe drain, 6–8-ft.	150 l. f.	1.40	1.15	2.25
22. 12-in. toe drain, 4–6-ft.	3,610 l. f.	1.50	2.14	2.00
23. 12-in. toe drain, 6–8-ft.	515 l. f.	2.00	2.14	2.50
24. 12-in. toe drain, 8–10-ft.	400 l. f.	2.50	2.14	4.00
25. Conn., existing drains	6 ea.	10.00	1.00	25.00
26. Steel sheet piling	1,880 s. f.	2.00	1.44	1.50
27. Railroad ballast	30 c. y.	5.00	1.80	3.00
28. Vault door and frame	2 ea.	150.00	110.00	175.00
29. Concrete pavement	2,110 s. y.	2.50	2.79	2.75
30. Bitum. pavement	1,160 s. y.	2.00	2.35	2.50
31. Gravel surfacing	620 s. y.	1.00	.40	1.00
32. Remov. exist. conc. pavmt.	2,110 s. y.	.40	.50	.40
33. Remov. exist. bitum. pavmt.	1,160 s. y.	.40	.35	.30
34. Remov. existing struct.	L. S.	125.00	85.00	100.00
35. Relocate house drains	L. S.	150.00	125.00	400.00
36. Seal trench filler	50 s. f.	1.00	.25	1.50

CHANNEL IMPROVEMENT, MICH.

OWNER: U. S. Engineer Office, Detroit; Col. C. R. Pettis, district engineer.

PROJECT: Removal, disposal of approximately 273,000 cu.yd. of ledge rock and 321,700 cu.yd. of material other than ledge rock from Trenton Channel, Detroit River. Length of channel is 15,922 ft. and width is 250 ft. Depth 21 ft. below low water datum. Also includes a trapezoidal turning basin 1,000 ft. wide and 1,350 ft. long. Stipulated contract time is 300 calendar days after receipt of notice to proceed. Transportation by rail, highway and water is available. Ledge rock requires drilling and blasting. Excavated material must be transported and deposited in authorized dumping ground. Material dumped in Lake Erie must be transported in scows around the upper end of Grosse Isle. Other dumping grounds may be used alongside of channel bank of harbor line. A rubble dike is required to confine material on the channel side of Elizabeth Park disposal area. The usual range of water level is 2 ft. as measured by mean monthly stages. River current is normally 1½ m.p.h. Channel in natural condition with scattered boulders.

BIDS: Five bids were received Apr. 6, 1939, ranging from the contract low of $868,262 to $980,810. Labor rates are as follows: skilled, $1.50 to $1.875 per hr.; semi-skilled, $1.073 to $1.11 per hr.; common, 70¢ per hr.

LOW BIDDERS:

1. Dunbar & Sullivan Dredging Co., Detroit (contract) $868,262
2. Powers-Thompson Construction Co., Joliet, Ill. 896,475
3. Great Lakes Dredge & Dock Co., Cleveland.. 910,912

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Ledge rock	273,000 c. y.	$1.46	$2.40	$2.85
2. Other material	321,700 c. y.	1.46	.75	.413

DIKES AND PILOT CANAL, MISSOURI

OWNER: U. S. Engineer Office, 601 Davidson Bldg., Kansas City, Mo.

PROJECT: Constructing 4,200 ft. of dikes, 3,430 ft. of revetment and a pilot canal approximately a mile long, 200 ft. wide, and 15 ft. deep, along the Missouri River between Kansas City Reach and Sissons Bend; center of work about 6½ miles downstream from Kansas City, Mo.

CONDITIONS: Dikes and revetment to be completed in 100 days; pilot canal in 120 days. Rail, water and highway transportation facilities available. Contractor to furnish all materials. Wage rates specified are: skilled, $1.10 per hr.; semi-skilled, 75c. per hr.; and common labor, 45c. per hr.

BIDS: Seven bids received on dike and revetment construction Oct. 4, 1939, ranging from contract low of $137,943 to $167,875. Eight bids received on pilot canal on the same day range from the low of $72,420 to $149,100.

DIKE AND REVETMENT

LOW BIDDERS:

1. James Constr. Co., St. Paul, Minn. (contract) $137,943
2. Massman Constr. Co., Kansas City, Mo.... 143,624
3. W. P. McGeorge, Pine Bluff, Ark..... 153,617

Pile Dike

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Lumber mattress	3,450 sq.	$6.50	$6.50	$6.80
2. Stone, on mattr. and dike	4,180 ton	2.25	2.30	2.50
3. Stone, in cast paving	720 ton	2.40	2.65	3.00
4. Stone, hand placed paving	330 ton	3.60	4.00	4.00
5. Cr. stone or quarry chips	30 ton	2.00	4.00	3.00
6. Stringers or brace piles	76,600 l. f.	.445	.455	.47
7. Grading	1,200 c. y.	.20	.20	.25

Revetment

Item	Quan.	Unit Prices (1)	(2)	(3)
1. Willow mattress	460 sq.	$8.00	$7.20	$7.50
2. Lumber mattress	2,769 sq.	6.60	6.50	6.80
3. Stone on mattress	4,877 ton	2.25	2.30	2.50
4. Stone in cast paving	1,420 ton	2.50	2.65	3.00
5. Stone, hand placed paving	1,170 ton	3.50	4.00	4.00
6. Cr. stone or quarry chips	275 ton	2.50	2.65	3.00
7. Anchor piles	1,860 l. f.	.45	.455	.50
8. Piles and stringers	37,800 l. f.	.44	.455	.46
9. Grading	96,000 c. f.	1.05	.14	.18

PILOT CANAL

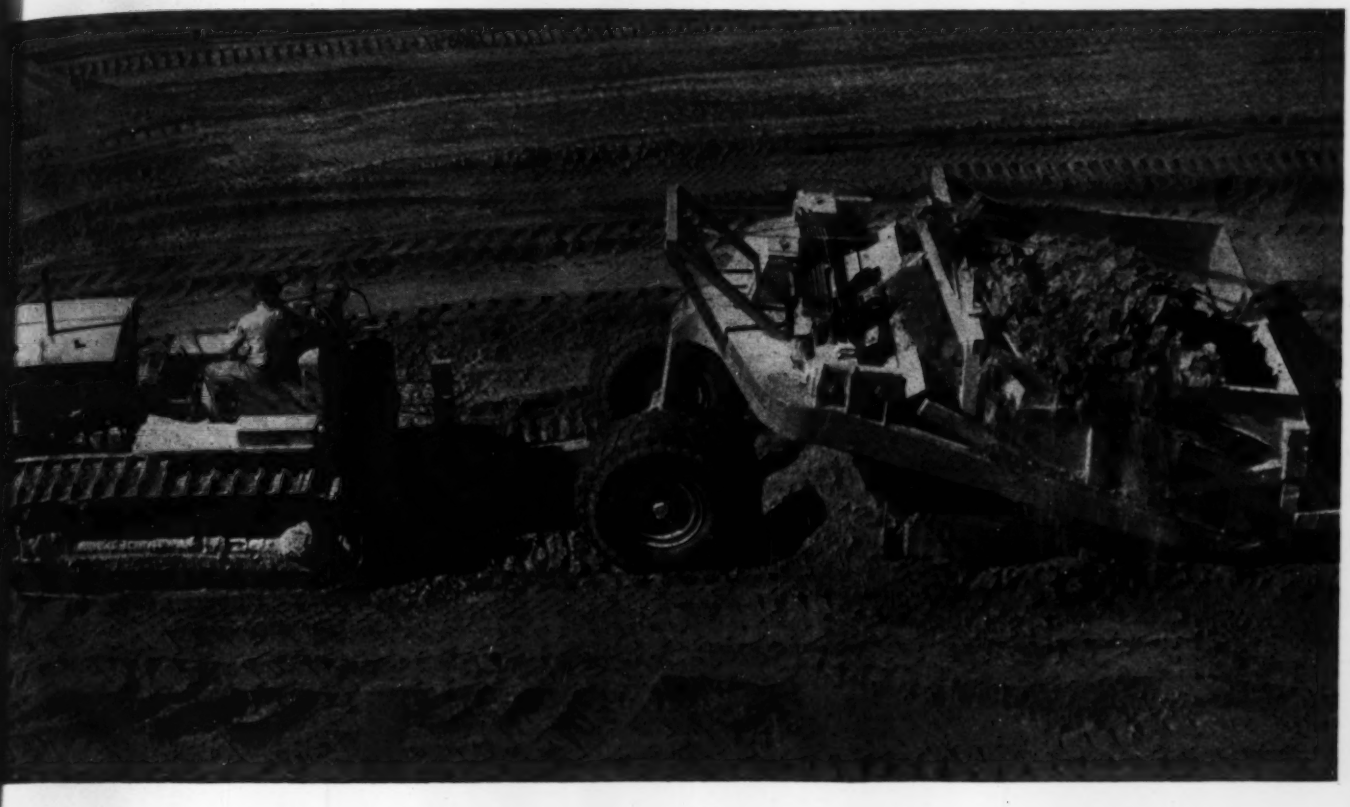
LOW BIDDERS:

1. Martin-Day Co., Lincoln, Nebr. (contract).. $72,420
2. J. A. Terteling & Sons, Boise, Idaho..... 78,597
3. Mark C. Walker & Sons Co., Omaha, Nebr. 87,756

Item	Quan.	Unit Prices (1)	(2)	(3)
Excavation	1,065,000 c. y.	$0.068	$0.0738	$0.0824

Costs Cut

BY ROEBLING "BLUE CENTER" WIRE ROPE



USERS of all kinds of earth moving equipment have found that the use of Roebling "Blue Center" Wire Rope assures minimum wire rope cost. The above user is a typical example.

The *Ace* of all Roebling Wire Ropes—"Blue Center"—has been specially developed by Roebling, through years of research, to provide the maximum of durability, safety, and economy in rope service. It is made of famous Roebling acid open-hearth steel—which provides maximum resistance against abrasion, fatigue, and sudden shocks.

Specify Roebling "Blue Center" Wire Rope when you re-rig your equipment. We are confident that your experience will parallel that of other contractors, who have proved to their complete satisfaction that "Blue Center" assures lowest average rope operating cost.

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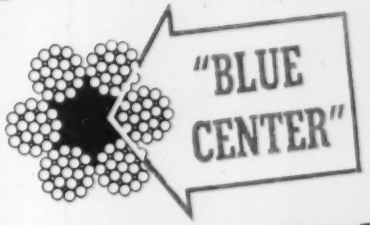


WIRE ROPE

STANDARD OR PREFORMED

ROEBLING "BLUE CENTER"... *The Finest of all Roebling Wire Ropes!*

MARSHALL FORD DAM POWER PLANT, TEXAS

OWNER: Lower Colorado River Authority, Austin, Tex.; F. Englehardt, chairman; C. McDonough, engineer.

PROJECT: Construction of Marshall Ford power plant and appurtenant structures, Colorado River, near Austin, Tex.

CONDITIONS: Highway transportation facilities available. Wage rates in Austin, Tex. area are: skilled labor, $1.25 to $1.50 per hr.; semi-skilled, 87½c. to $1.12½; and common, 65c. per hr.

BIDS: Two bids were received Jan. 5, 1940, the low of $556,342, and $651,561. The low bidder, Marshall Ford Construction Co., is a partnership of Herman & George Brown, and McKenzie Construction Co.

LOW BIDDERS:

1. Marshall Ford Constr. Co., Austin, Tex. (contract) $556,342
2. H. B. Zachry Co., Laredo, Tex..... 651,561

Item	Quan.	Unit Prices (1)	(2)
1. Common excavation	80,050 c. y.	$0.40	$0.45
2. Rock excav., power house	810 c. y.	10.50	6.25
3. Rock excav., tailrace	10,000 c. y.	2.10	3.80
4. Backfill	18,000 c. y.	.35	.75
5. Riprap	2,700 c. y.	1.30	2.25
6. Concr., rein. conc. retaining wall	1,800 c. y.	13.00	18.00
7. Concr., gravity retaining wall	700 c. y.	12.00	18.00
8. Concr., power house substr	8,500 c. y.	13.75	20.00
9. Concr., power house superstr	2,450 c. y.	32.50	35.00
10. Billet-steel reinf. bars	655,000 lb.	.053	.045
11. Rail-steel reinf. bars	655,000 lb.	.050	.043
12. Drill and set dowels	2,000 l. f.	.65	1.10
13. Concrete excavation	1,000 c. f.	2.60	1.20
14. Roofing	17,600 s. f.	.20	.23
15. Concrete floor finish	9,900 s. f.	.10	.06
16. Suspended ceilings	515 s. y.	2.50	4.15
17. Metal sealing strips	9,000 l. f.	1.30	2.10
18. Structural steel	415,000 lb.	.064	.089
19. Steel stairs and ladders	16,000 lb.	.26	.30
20. Metal floor plates, gratings, registers, treads, manhole fr. and cov., etc.	23,000 lb.	.21	.32
21. Industrial windows	1,850 s. f.	1.00	1.15
22. Continuous windows	200 s. f.	5.00	3.25
23. Steel doors	600 s. f.	3.80	5.10
24. Str. steel for windows, doors and glass brick	24,000 lb.	.21	.18
25. Metal guides, draft tube stop logs	22,500 lb.	.24	.19
26. Armor plate, draft tube	48,000 lb.	.105	.12
27. Misc. iron and steel	15,000 lb.	.37	.30
28. Metal partitions	200 s. f.	1.20	2.00
29. Metal lockers	15 ea.	13.00	30.00
30. Black steel drains and piping, 12-in. and over	23,600 lb.	.13	.15
31. Black steel drains and piping, under 12-in	23,000 lb.	.145	.18
32. Wrought iron drains and piping	25,000 lb.	.17	.22
33. Cast iron drains and piping	44,600 lb.	.12	.15
34. 30-in. vitr. clay dr. and piping	125 l. f.	4.20	10.00
35. 6-in. vitr. clay dr. and piping	75 l. f.	.80	2.00
36. Floor drains	14 ea.	24.00	15.00
37. Roof drains	9 ea.	31.00	12.00
38. Installing valves	14,000 lb.	.07	.03
39. Install small electr. boxes	3,280 lb.	.45	.10
40. Electr. conduit, metal, ¾-in	3,300 l. f.	.22	.20
41. Electr. conduit, metal, 1-in	4,890 l. f.	.33	.30
42. Electr. conduit, metal, 1¼-in	6,220 l. f.	.43	.40
43. Electr. conduit, metal, 1½-in	3,370 l. f.	.52	.50
44. Electr. conduit, metal, 2-in	1,420 l. f.	.70	.70
45. Electr. conduit, metal, 2½-in	840 l. f.	1.00	.90
46. Electr. conduit, metal, 3-in	320 l. f.	1.35	1.20
47. Electr. conduit, metal, 3½-in	280 l. f.	1.70	1.50
48. Electr. conduit, metal, 6-in	160 l. f.	4.00	2.00
49. Electr. conduit, fiber, 3-in	1,330 l. f.	.38	.25
50. Electr. conduit, fiber, 3½-in	2,500 l. f.	.38	.30
51. Electr. conduit, fiber, 4-in	2,500 l. f.	.38	.35
52. Concrete envelope, power	390 l. f.	10.60	8.00
53. Concrete envelope, control	360 l. f.	30.00	18.00
54. Concrete envelope, village supply	1,500 l. f.	2.00	1.00
55. Grounding	8,800 lb.	.29	.30
56. Wooden doors	1 ea.	65.00	15.00
57. Ventilator duct	4,500 s. f.	.52	.30
58. Plumbing fixtures	L. S.	950.00	600.00
59. Tile floor	150 s. f.	1.30	3.00
60. Hollow tile partition walls	1,000 s. f.	.60	.75
61. Transformer larry track	315 l. f.	5.60	6.40
62. Glass brick	3,300 s. f.	2.60	1.95
63. Water supply line to village	3,500 l. f.	2.30	1.70
64. Unload, haul and install turbine parts, embedded in concrete	225 ton	80.00	62.50
65. Unload, haul to power house, and unload	900 ton	6.50	3.25
66. Install power house crane	L. S.	4,600.00	5,000.00
67. Install sump pumps and motors	6 ea.	135.00	50.00
68. Sand	1,760 c. y.	.65	2.05
69. Addition to concrete cost, Items 8 and 9, when Cl. A conc. needed	100 c. y.	.50	1.25

TRANSMISSION LINES, OREGON

OWNER: Bonneville Project, 811 N. E. Oregon St., Portland, Ore. Charles E. Carey, engineer.

PROJECT: Erecting towers and stringing 235 miles of conductor for Bonneville-Coulee transmission line of Bonneville Transmission System.

CONDITIONS: Project to be completed in 345 days. Highway transportation facilities available. Government to furnish tower steel, insulators, line hardware, conductor and conductor splice connectors, repair sleeves, dead end connectors, jumper materials, fittings, conductor splicing tools, armor rods, armor rod wrenches, armor rod clamps, ground wire cables and ground wire cable fittings, ground rods, clamps, ground wire, and ground wire clamps and bolts. Contractor to furnish all other materials. Minimum wage rates specified are: skilled, $1.00 to $1.50 per hr.; semi-skilled, 75 to 87½c. per hr.; and common, 62½c. per hr.

BIDS: Two bids were received June 15, 1939, the contract low of $947,726, and $1,062,592.

LOW BIDDERS:

1. Fritz Ziebarth, Long Beach, Calif..... $947,726
2. Associated Constructors, Los Angeles, Calif. 1,062,592

SCHEDULE 1—TOWER FOUNDATIONS

Item	Quan.	Unit Prices (1)	(2)
1. Conc. tower fndn., type A	78 ea.	$500.00	$520.00
2. Conc. tower fndn., type B	97 ea.	550.00	580.00
3. Conc. tower fndn., type C	5 ea.	1,000.00	1,000.00
4. Conc. tower fndn., type D	28 ea.	2,450.00	2,800.00
5. Conc. tower fndn., type E	1 ea.	625.00	700.00
6. Grillage tower fndn., type A	866 ea.	225.00	280.00
7. Grillage tower fndn., type B	40 ea.	350.00	340.00
8. Grillage tower fndn., type C	7 ea.	600.00	500.00
9. Grillage tower fndn., type D	25 ea.	1,000.00	1,000.00
10. Grillage tower fndn., type E	5 ea.	410.00	380.00
11. Uncl. excav., spec. fndn	5,800 c. y.	4.80	4.00
12. Rock excav., foundations	13,096 c. y.	7.50	6.00
13. Piling, spec. fndn	3,400 l. f.	1.00	1.50
14. Drill and grout for reinf. steelanchor dowels	1,800 l. f.	1.00	1.00
15. Reinf. steel, spec. fndn	25,000 lb.	.08	.07
16. Concrete, spec. fndn	1,000 c. y.	30.00	26.00
17. Struct. steel, spec. fndn	9,100 lb.	.04	.025
18. Ground connections, accessories	3,200 lb.	.50	.65

SCHEDULE 2—TOWER ERECTION

Item	Quan.	Unit Prices (1)	(2)
1. 50-ft. type A1 tower	521 ea.	$140.00	$176.00
2. 70-ft. type A1 tower	398 ea.	182.00	230.00
3. 50-ft. type A2 tower	4 ea.	150.00	180.00
4. 70-ft. type A2 tower	22 ea.	185.00	230.00
5. 50-ft. type B1 tower	23 ea.	165.00	210.00
6. 70-ft. type B1 tower	72 ea.	210.00	270.00
7. 50-ft. type B2 tower	6 ea.	165.00	215.00
8. 70-ft. type B2 tower	36 ea.	215.00	275.00
9. 50-ft. type C1 tower	5 ea.	215.00	265.00
10. 70-ft. type C1 tower	7 ea.	260.00	330.00
11. 42-ft. type D1 tower	15 ea.	285.00	365.00
12. 62-ft. type D1 tower	38 ea.	365.00	460.00
13. 50-ft. type E tower	5 ea.	195.00	250.00
14. 70-ft. type E tower	1 ea.	260.00	325.00
15. Ground wire bracket, type A	22 ea.	18.00	10.00
16. Ground wire bracket, type B	6 ea.	18.00	9.00
17. Ground wire bracket, type C	10 ea.	40.00	22.00
18. Ground wire bracket, type D	10 ea.	40.00	22.00
19. Steel, leg extensions	2,435,544 lb.	.02	.017
20. Steel, spec. structures	197,680 lb.	.035	.025
21. Airway lighting, Columbia River crossing	L.S.	1,000.00	950.00
22. Airway marking, Columbia River crossing	L.S.	1,000.00	1,700.00

SCHEDULE 3—STRINGING CONDUCTOR

Item	Quan.	Unit Prices (1)	(2)
1. String 3 conductor line, incl. splices, dead end connectors, armor rod assem., insulators, hardware, hold-down weights and appurtenances	234.75 circ. mile	$490.00	$650.00
2. String 2 ground wires, incl. dead ending, splicing and attaching to towers	4.75 circ. mile	400.00	320.00

Highway Information Service Photo

Equipment on Parade

Review of construction and road equipment, materials, tools, supplies and accessories exhibited at the 1940 Road Show in Chicago, Jan. 29-Feb. 2.

THE GREATEST ROAD SHOW in the history of the American Road Builders Association was held in the International Ampitheatre at Chicago, Jan. 29-Feb. 2. From all over this country, from Canada, Mexico, Central and South America, and even from Europe came interested and buying visitors that piled up a record registration of 47,322 for the five-day run of the Show. Nearly 300 exhibitors displayed their products over 8½ acres of floor area—products estimated at $5,000,000 value. The manufacturers were delighted and even amazed at the buying mood of the crowd. Many reported sales from the floor that exceeded all hopes and expectations. Most of the larger units were sold right off the floor. Conservative estimates place the total sales for the week at $5,000,000.

The exhibits clearly indicate the trend of equipment development is toward higher speeds and greater output. A major advance has been made in the earth-moving line of machinery in the development of high-speed, high-capacity carrying scrapers through the use of fast power units, some integral with the scraper, others as separate tractors, two and four-wheeled. A 45-yd. scraper, hauled by a 185-hp. two-wheeled tractor was the sensation of the week. All of the high-speed tractor-scraper units require a pusher tractor for loading, and some manufacturers admit an additional tractor on the front end while loading is a help.

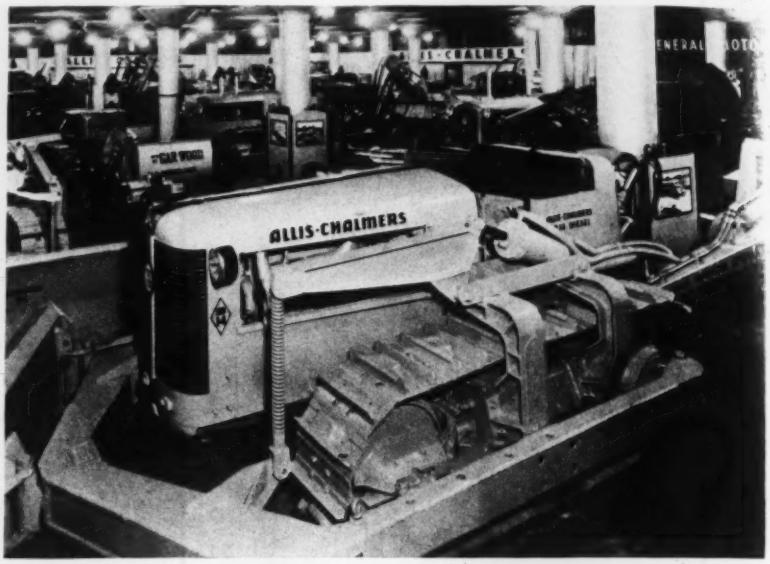
When crawler tractors reached the 95-hp. size a short time ago it was inevitable that 100-hp. tractors would soon appear; they are here now, for new model 108-hp. diesel tractors were at the Show. Diesel engines first appeared in construction equipment as big shovel and dragline power, soon spread to tractors, and are now used for power in almost every line from small generating plants up through trucks, pavers, and the full range of earth movers and excavators.

By no means was the Show confined to equipment. Never before was such a variety and amount of accessories, small tools, materials and supplies on display. Inspection of the multitude of accessories reveals why modern construction equipment is so dependable, so precise in operation, and so easy to operate.

Several interesting exhibits of the educational type were shown. On a turntable the Pennsylvania Turnpike Commission brought the visitor a panorama showing to scale the alignment, grades, tunnels, and cuts of the Turnpike compared with the existing roads winding over the mountains. The Chicago Park District exhibited pictures of the new movable Divisional Fin traffic separator being installed on North Lake Shore Drive. The A.R.B.A. Committee on Highway Illumination, in cooperation with the lamp department of the General Electric Corp. and the Chicago Motor Club, showed a portable laboratory used to determine the effectiveness of street and highway lighting. In the Chevrolet exhibit General Motors displayed pictures and reproduced some of the voicing from the "Futurama"

at the N. Y. World's Fair giving one conception of the Highways of Tomorrow. The U. S. Dept. of Commerce showed figures on export and domestic consumption of road material and equipment.

Following is a description of the products displayed by each manufacturer, listed in alphabetical order of firm names, compiled from a booth-to-booth inspection by two members of the *Engineering News-Record* editorial staff. At the back of this special insert is an index of products displayed at the Show.



Tractors have passed 100 hp. in size. Here is an Allis-Chalmers 108-hp. diesel.

—A—

J. D. Adams Co., Indianapolis, Ind.

Three brand new units were on display. The new Adams No. 411 motor grader is powered by an International TD40 diesel engine, has eight forward speeds, extremely wide range of blade adjustment, and fully reversible blade. It is power-controlled throughout and is equipped with a four-wheel tandem drive. The new No. 50 hauling scraper is a 5-yd. tilting bowl rig featuring four extra large tires for flotation on soft material and for easy draft. It is cable controlled, and is representative of the Adams line of 3, 5 and 10-yd. scrapers. The new Adams tamping roller, a double drum model, attracted considerable attention because of its removable and replaceable feet, providing a wide range of compaction pressures. Also shown was the No. 105 standard Leaning Wheel grader with a 10-ft. blade, mechanically operated and featuring the single arch "Monomember" frame, typical of Adams graders in the 12, 10 and 8-ft. blade sizes. The Adams No. 51 motor grader was on display in the International exhibit, International diesel powered.

Aeroil Burner Co., Inc., West New York, N. J.

A feature of the Aeroil display was a new asphalt heating and melting kettle using heat inside the kettle. This is the first time heat has been introduced directly into the material to be melted. They also showed a new emulsion and cut-back sprayer, semi-trailer mounting. Representative of the rest of its line Aeroil exhibited asphalt surface and tool heaters, a concrete curing machine, oil weed burners and devices for control of highway traffic.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Allis-Chalmers occupied one of the largest spaces on the floor. One of its outstanding exhibits was the new HD-14 diesel tractor, rated at 108 hp. at the drawbar and 130 hp. at the belt. It is powered by a General Motors 2-cycle diesel engine, and has a range of six forward speeds from 1.72 to 7.0 mph., and two reverse speeds of 2.0 and 3.2 mph. Other tractors on display in the Allis-Chalmers exhibit included the WS gas power, rated at 70.44 hp. at the drawbar, speeds from 1.52 to 6.37 mph. forward and 1.76 mph. reverse; the WKO diesel fuel oil engine tractor, 54 hp., speeds from 1.72 to 5.92 mph., forward and 2.10 reverse, carrying a Pacific Car & Foundry Co. towing winch; the Model 1-B gas tractor, 13.5 hp., capable of a speed of 10 mph., mounted on four rubber-tired wheels; and the Model HU 31.8-hp. gas tractor, dual drive on four rubber tires.

The new Model 110 drawn grader received lots of attention. It is full power controlled, and has a new type of leaning frame that permits holding the blade to any desired slope, then moving the frame to pass obstructions, such as telephone poles. The frame is a single tube, and the 10-ft. blade is hung from a smaller tubular arm. The grader cuts flat-bottom ditches from 6 in. to 9 ft. wide, and will work with one set of wheels in a ditch 3 ft. deep. Power for controls is supplied by a small gas engine. Allis-Chalmers also showed the Speed Maintainer, a 3-wheel tractor rig, with one wheel in front, carrying a 9-ft. blade, manually controlled, capable of speeds from 2½ to 10 mph.

Other graders shown were the Allis-Chalmers W Speed Patrol Maintainer, carrying a 10-ft. moldboard, manually controlled, mounted on four rubber tires, rated at speeds from 2½ to 10 mph.; and the Model 42 Speed Patrol Grader, rated at 45 hp., speeds up to 10 mph., tandem drive and full power controlled. Numerous Allis-Chalmers gas engine power plants were shown in various sizes, one connected to an A-C centrifugal pump, and some included clutch assemblies.

M. C. Almes, Cuyahoga Falls, Ohio

Theft-proof rubber letters with glass reflectors for addition to existing road signs and arrow-shaped road side markers for highway use were included in this display of traffic signs.

American Bosch Corporation, Springfield, Mass.

Plain and fancy magnetos, injection pumps, windshield wipers, oil filters, voltage regulating generators, and the new magneto motors constituted the exhibit.

American Cable Div., of American Chain and Cable Co., Wilkes-Barre, Pa.

Cable, guard rail, push-pull type control cable, and "Tru-stop" brake material were shown as representative of the company's products.

American Hoist & Derrick Co., St. Paul, Minn.

Equipment in the small hoist field was featured by a 2,000-lb. line pull, 16-hp. Le Roi engine, set on frame of very light welded construction for easy handling on the job. A 7,500-lb. single line pull, two drum hoist with a 56-hp. Buda engine, also on welded steel frame, was shown with banked levers

for easy operation. A representative group of wire rope blocks and genuine Crosby clips completed the display.

American Manganese Steel Div., of The American Brake Shoe & Foundry Co., Chicago Heights, Illinois

A 1¾-cu. yd. shovel dipper, buckets, chain, crusher jaws and hard surfacing welding rods were shown as representative of the general lines of this company.

Anthony Company, Inc., Streator, Ill.

A full size working model showing complete operation of the Anthony dump hoist was displayed with bodies on various pieces of equipment varying in size from 5 to 30 tons. A 9-ft. snow plow and a 2½-cu.yd. dump body were shown on a Chevrolet truck and an 8 to 10-cu.yd. dump body on a Fruehauf semi-trailer. All bodies featured low loading height.

Ariens Company, Brillion, Wis.

A rubber-tired aggregate mixer for mix-in-place road construction, tractor drawn and driven by power takeoff, was shown as the principal exhibit, with information given on Ariens tiller for roadside landscape work.

Armco Drainage Products Association, Middletown, Ohio

Several relatively new products were shown including Pipe Arches for drainage where headroom is limited, sheet piling of special corrugated design, blast plates for protection of structures from locomotive exhaust, and tunnel liner plates for both light and heavy duty. The usual Multi-Plate culverts and bin-type retaining wall material were displayed.

Asam Motor Company, Detroit, Mich.

A gear-driven four-wheel drive for Chevrolet trucks was mounted on a standard chassis, displaying advantage of easy installation and additional transmission speeds.

The Asphalt Institute, New York

This trade association for the producers of asphalt displayed literature about its work and the use of asphalt.

Athey Truss Wheel Co., Chicago, Ill.

Athey is proud of their new Mobi-Loader, a front-end shovel mounted on a Caterpillar D4 tractor. The model shown was equipped with a 1½-yd. bucket, although a 2-yd. model is made for mounting on a D8 Caterpillar tractor. The bucket is cable-operated by take-off power from the tractor, and will dump to the front or overhead to the rear, at height of 7½ ft. and 11 ft. respectively. The bucket is mounted on the front end of the tractor, through arms that extend to the back axle, therefore the lift is in an arc rather than vertical. Athey also had on display a 16-yd. two-way dump wagon on Athey Forged Trak crawlers, and mounted on railroad-type springs. The wagon is fitted with down dump doors, is operated by a single cylinder hydraulic hoist and can be raised to a dumping angle of 55 deg. It is a low-loading height model, 7 ft. 2 in. off the ground, which is claimed to speed up operation of the shovel.

Austin-Western Road Machinery Co., Aurora, Ill.

Austin-Western has a new high speed tractor-scraper unit in an 8-yd. hydraulic controlled scraper, mounted on eight wheels, pulled by an Austin-Western 4-44 high-speed wheel tractor, equipped with dual front and rear tires, with independent steering on both axles. The tractor is powered by International diesel engine. The Model 99 power grader was shown with two auxiliary units, one being a truck loader attached to the rear of the grader, equipped with an elevating belt conveyor and a screw gatherer at the base for collecting and loading material into trucks. The other grader was fitted with an auxiliary finishing blade for slope work, hydraulic controlled; the 9 ft. auxiliary blade is also handy for hogging down slopes. Also included in the Austin-Western display was an 8-ton three-wheel roller with Roll-A-Plane auxiliary third roll in the center, full hydraulic control, roller bearing equipped throughout, Buda gas engine powered; also the Austin-Western Patrol Sweeper, a small three-wheel unit, hydraulic controlled with a rotary gutter brush and a front trash broom.

Autocar Co., Ardmore, Pa.

Representing Autocar was a 10-ton four-wheel drive 157-in. wheelbase truck powered by a 6-cyl. 150-hp. Cummins diesel engine.

—B—

Baker Mfg. Co., Springfield, Ill.

The little 3, 4, and 5-yd. Baker hydraulic scrapers received a lot of attention. These are two-wheel units, equipped with the Auto-Spring lift, which takes much of the strain off the hydraulic operating equipment. Baker also showed several snow plows, both V and wing types, hydraulic control, mounted on Allis-Chalmers tractors, both wheel and crawler types. One of the wheel tractors carrying a big plow was fitted with a canvas inclosed cab. Four sizes of V-type snow plows for truck mounting were also shown. The Baker hydraulic controlled Grade-builder was mounted on an A-C HD14 diesel tractor, as was also a Baker hydraulic bulldozer.

Balderson Mfg. Co., Wamago, Kans.

Balderson featured its deep curve type moldboard snow plows, the B40 V-type and the R30 bulldozer type for mountainous country, both hydraulic operated.

Barber-Greene Co., Aurora, Ill.

New in the Barber-Greene line is the Utility bituminous mixer, Model 842, a small-size unit on pneumatic tires. The display also included a bituminous tamping leveling finisher for bituminous surfaces; the model 82A high capacity bucket loader; and a 30-ft. section of permanent belt conveyor, equipped with a 24-in. belt, featuring a 24-in. deep truss, and roller-bearing carriers. The Barber-Greene display was brightened by 38 8x10-in. transparent Kodachrome natural color photographs of equipment at work, taken by Jack Turner of the Barber-Greene Co.

Barco Mfg. Co., Chicago, Ill.

A sectional hammer showing the Barco gasoline-driven explosion principle application to spades and breakers was displayed. A rock drill attachment with a small air compressor for blowing out drill holes, and a new clay spade of light construction and easy to handle were shown.

Barnes Mfg. Co., Mansfield, Ohio

A hand diaphragm pump, a 3-in. and a 4-in. gasoline-powered diaphragm pump, and a 4-in. double diaphragm lift and force pump were shown; 1¼ to 4-in. centrifugal, self-priming pumps were shown with Briggs & Stratton, Wisconsin, Hercules and LeRoi engines on the various pieces.

The Barrett Co., New York, N. Y.

Featured a big Tarvia distributor mounted on an International truck.

Bay City Shovels, Inc., Bay City, Mich.

The improved Model 45 ¾-yd. Bay City dragline was on display, featuring the swinging mechanism inclosed in oil, full swivel type fairleads, ball-bearing mounted drum, cast drum with nickel iron flanges, and powered by the

new 60-hp. three-cylinder two-cycle General Motors diesel engine. A ¾-yd. heavy duty Bay City dragline bucket was hanging from the load line. Another improved unit was the Model 65 1¼-yd. high lift shovel, equipped with Caterpillar diesel power, and featuring a 22-ft. welded box boom and 18-ft. dipper stick, capable of loading to a height of 24½ ft. This unit is equipped with cast alloy steel heat treated base, single chain crowd, and an electric dipper trip mechanism. A third Bay City machine on display was the Model 25 ½-yd. trench hoe, powered by an International six-cylinder gas engine, featuring swinging mechanism inclosed in oil, with malleable iron drum, and a special curved heel bucket designed for basement digging.

Bendix Products Div., Bendix Aviation Corp., South Bend, Ind.

Mechanical, hydraulic and vacuum-powered brakes for all types of vehicles, vacuum pumps for diesel and similar operation, carburetors for automotive and industrial applications, cleaners, brake testers, gages and correcting instruments for automotive wheel and frame alignment, were shown. Hydraulic steering for heavy-duty units and hydraulic throttle and clutch controls were also exhibited with a high-angle universal joint.

Bendix Westinghouse Automotive Air Brake Co., Pittsburgh, Pa.

Several sizes of complete air brake equipment for automobiles and trucks were shown in this exhibit as representative of the line of air-controlled and air-operated equipment of this company.

Bethlehem Steel Co., Inc., Bethlehem, Pa.

Cable highway guard rail, welded truss reinforcing, reinforcing steel, hollow drill steel, and fence material made up the highway part of the exhibit. A model cable spinner making 6x7 cable for sash cord illustrated the cable activities of the company.

Black & Decker Equip. Co., Towson, Md.

A Loadometer for weighing vehicles on the highway was featured. Also shown were representative pieces of the drills, grinders, sanders, saws, etc., manufactured by the company.

Blackhawk Mfg. Co., Milwaukee, Wis.

A full line of hydraulic jacks and hydraulic high-pressure pump units for operation of jacks were shown with gas and electric power for rapid operation.

Blaw-Knox Co., Pittsburgh, Pa.

The latest in Blaw-Knox products is the new Road Finisher, a 10 to 12-ft. machine powered by Hercules gas engine and fitted with Blaw-Knox transmission, especially designed for modern stiff concrete. The new Blaw-Knox finisher is lighter in weight than previous models, and contains no tamper or vibrator; its belt strokes are synchronized with the travel speed. Other products on display included a 1-yd. roller bottom concrete dump bucket, a ½-yd. digging clamshell with a new type of extended corner bracket, a 1-yd. cement weighing batcher, a 2½-yd. truck mixer on International D500 truck, a 2½-yd. truck mixer with Thornton tandem drive on a Chevrolet truck, and a full line of Blaw-Knox road, curb and gutter forms.

Broderick & Bascom Rope Co., St. Louis, Mo.

Samples of the full line of B&B Yellow Strand wire rope, Flex-Set preformed, were shown. A wire rope strander in actual operation was the center of attention in this display.

Brooks Equipment & Mfg. Co., Knoxville, Tenn.

This manufacturer showed low loading boxes for quarry and dirt moving jobs where hand loading is used. A hydraulic hoist lifts box to bed of truck for transfer. Several boxes may be used for each truck. A 10x16 hammer-type pulverizer for agricultural lime and a 10x20 jaw crusher with overhead eccentric roller bearing was also shown.

Wm. Bros Boiler & Mfg. Co., Minneapolis, Minn.

A rotary snow plow powered by a Ford Mercury engine, and a semi-trailer mounted circulating tank car heater with Ford power, and a 3-in. Viking pump were shown. A model of a rubber-tired road roller also was in the exhibit.

Buckeye Traction Ditcher Co., Findlay, Ohio

The Buckeye Clipper was on display, a full-revolving convertible ½-yd. shovel featuring the Mevac metered vacuum control, operated by a vacuum pump driven off the motor, and a Buda 6-cylinder gas engine. An adjustable-blade trailbuilder on an International diesel tractor; two power control units; a surface material spreader; and a crawler-mounted ditcher with a Buda gas engine were also shown. Featured in the exhibit was an 8-ft. surface grader for road and airport work. This machine cuts a good depth of earth to finished grade, and with a swing stack on the rear, will load excess mater on trucks or to the side of the road. T machine, Buda gas powered, has overall length of 35 ft.

Bucyrus-Erie Co., South Milwaukee, Wis.

Bucyrus-Erie has two new shovel a small and a large one. The ne Model 10B ⅜-yd. shovel is powere by a 6-cylinder Buda gas engine an features a welded double boom and single dipper stick. The rig is avail able in seven different kinds of fron end. The other new model is the 54-B 2½-yd. shovel, Buda diesel powered equipped with conical hooked rollers, both up and down, and no center pintle. It has direct hand-set swing clutches, 36 in. diameter with a 6-in. face, and the boys say it handles like the little 10B. It is built as a shovel-dragline, equipped with oversize crawlers with tapered ends, two widespread dipper sticks and an all welded boom. All equipment is easily accessible, such as clutches and brakes, which have a single point adjustment, and all grease lines lead to one of three locations. The 22-B ¾ yd. dragline was also shown, Wisconsin gas powered on oversize mounting, fitted with a rock grab on a 35-ft. boom.

In the scraper line Bucyrus-Erie showed the new S-108 four-wheel cable controlled 9½-yd. scraper, hooked to an International diesel tractor, the cables operating from Bucyrus-Erie winches. Other scrapers included the S-63 cable-operated 5½-yd. four-wheel scraper and the H-44 rear dump 4-yd. hydraulic scraper hooked to an International diesel tractor. The H28 2½-yd. hydraulic two-wheel scraper was also shown. The display also included two hydraulic bullgraders and two hydraulic bulldozers on International diesel tractors, a Bucyrus-Erie tamping roller, a Bucyrus-Erie ⅜-yd. dragline bucket, the B-E hydraulic press for repairing heavy equipment, and the Bucyrus-Erie cable controlled three-tooth heavy-duty road ripper.

Buda Company, Harvey, Ill.

Four and six-cylinder diesels were shown with power ranging up to 245 hp. A 15-kw. diesel engine directly connected to a Star d.c. generator was shown. The Buda-Hubron earth drill was displayed with a gas Buda engine. A new injector nozzle tester for individual nozzle tests was also offered. Hydraulic and lever jacks up to 20 tons were displayed. Featured was a new variable speed hydraulic jack with the handle supported on a movable fulcrum to alter the ratio of speed to power.

Butler Bin Co., Waukesha, Wis.

The Cement Hog, a self-powered three-wheeled tractor with front scoop for bulk cement handling from box cars, was featured. Cement screw conveyors and single chain vertical bucket conveyor for hopper car unloading were shown with the smallest Butler cement bin. A weigh batcher and a model three-compartment batcher were also shown.

Byers Machine Co., Ravenna, Ohio

Byers featured its Model 83 streamlined ¾-yd. shovel, with a chain crowd, hooked rollers front and rear, welded bed frame, welded box boom and double welded box dipper sticks, powered by a Buda gas engine. Also shown was the Byers White Wing, a power sweeper streamlined right up to the minute, powered by a Hercules gas engine and equipped with two gutter brooms.

—C—

C. H. & E. Mfg. Co., Inc., Milwaukee, Wis.

A 3-ton tandem roller with weight concentrated on the rear wheel, a boiler mixer, and a single-drum hoist were displayed with a tilt-top saw table, a bar cutter capable of cutting up to 1¼-in. steel, and a bar bender. Also shown were 1½ to 4-in. centrifugal pumps and a 4-in. diaphragm pump. A feature of the exhibit was a combination saw rig and band saw.

Calcium Chloride Association, Detroit, Mich.

Demonstrative charts and test data on the use of calcium chloride for highway ice control, concrete curing, and for consolidation of unpaved roads, were shown.

Philip Carey Co., Lockland, Ohio

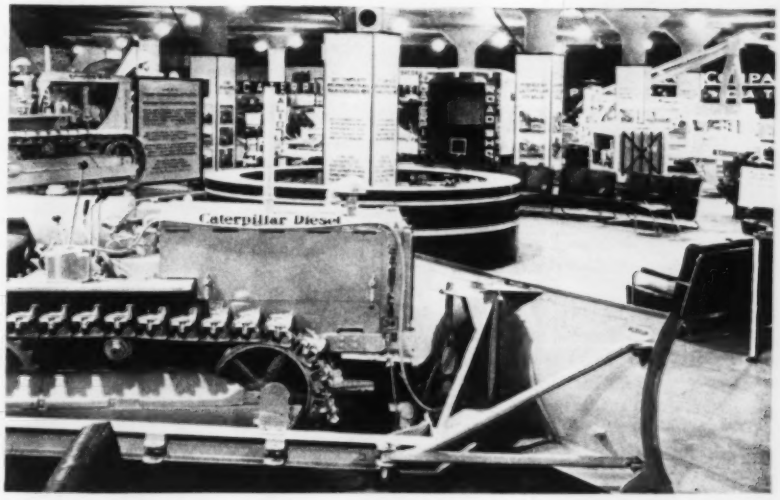
Literature and displays were shown on use of asphaltic products in road construction.

Ralph B. Carter Co., Hackensack, N. J.

A 1½-in. self-priming centrifugal caisson pump was shown in operation keeping a shallow hole dry. Two- in. and 3-in. self-priming centrifugal pumps and a 6-in. centrifugal with a Continental motor were shown.

J. I. Case Company, Racine, Wis.

Four new model wheeled tractors were on display in the Case exhibit. Smallest was the new V-1, a gas driven



Bright yellow Caterpillar equipment filled a big section of the floor.

17½ hp. equipped with a Detroit highway mower. Next in size was the Model D1, a 40-hp. gas tractor. Lined up alongside was the new L1, equipped with a Hesselman oil engine, rated at 56 hp., equipped with a new type Goodyear 15x28 in. 12-ply low pressure tires with a wide base that gives about the same road contact as dual tires, and provides more traction at a lower price. All three models of tractors are equipped with four-speed transmission, rear brake, and electric starting and lighting.

Caterpillar Tractor Co., Peoria, Ill.

The Caterpillar D7 diesel tractor has blossomed out in an entirely new streamlined design. It weighs 23,500 lb., has five forward speeds from 1.4 to 5 mph., and for each of the first four speeds there is a corresponding slightly higher reverse speed for fast bulldozing work. The D7 is equipped with a heavy-duty 4-cylinder diesel engine, operating at 1,000 rpm developing 75 hp. at the drawbar. Special track rollers need lubrication only once every 100 hours of operation. Through hydraulic steering clutches the big rig features "finger tip" steering. Caterpillar and its affiliated companies occupied a large space on the floor, and Caterpillar tractors, both gas and diesel in a full range of sizes were hooked up to various units. Caterpillar has entered the automotive field with a brand new 90-hp. 6-cylinder truck engine, the model D468, equipped with electric starter. At the show it was mounted in a special Caterpillar sound movie truck.

In the grader field, Caterpillar has two new models. One is the No. 112 Motor Grader, a 46-hp. diesel tandem drive machine, equipped with a 12-ft. blade and a V snow plow. It has a single box frame, is mechanically controlled throughout and carries a cable-operated wing snow plow adjustable in height and position for the full length of the blade. The other new grader is the Model 212, a 32-hp. diesel single drive, equipped with low pressure tires, a scarifier and a 10-ft. blade. The Model 66 power controlled blade grader was also shown, having a single box frame, and an air-cooled gas engine operating the power controls; it is a drawn type machine. The No. 12 Motor Grader was also on display, powered by a 56-hp. diesel engine, with a 2-cylinder opposed-type starting engine. It is mechanically controlled throughout, has a single box frame, tandem drive through large rubber tires, and features a dual radiator through which the lubricating oil is also radiated, and is equipped with a 12-ft. full revolving blade.

Other Caterpillar products on display included the 15-kw. streamlined compact 4-cylinder diesel-electric generating set, self-regulating, requiring no switchboard or voltage regulator. This outfit also comes in 20 and 30-kw. sizes, the latter being equipped with a 6-cylinder diesel engine; the big V8 160-hp. diesel power plant, introduced at Cleveland two years ago, was also shown along with the new 6-cylinder marine type diesel engine. In the gas power plant line, Caterpillar showed the 800G, one-cylinder 8-hp. model with clutch attached.

Centaur Corp., Greenwich, Ohio

Presented the 1940 model KN highway mower on its own four-wheel tractor. The blade operates at any angle, and comes in either 5 or 6-ft. lengths.

Chain Belt Co., Milwaukee, Wis.

Brand new is the 1940 Rex Roadmaker, a 27-E single drum Rex paver, equipped with a 35-ft. boom, heavier crawlers and Waukesha gas power. Also new is the Model 160 Double Pumpcrete, equipped with a new drive to operate either cylinder independently, powered by a Waukesha engine. Pumpcrete pipe was wrapped all around the display in pretzel bends, and the Pumpcrete machine was in actual operation, pumping lime mortar. A Model 160 single-cylinder Pumpcrete was also shown. Rex mixers on display included a 1½-yd. Motomixer, Wisconsin powered, on a Heil Jackass hoist and an International cab-over-engine truck; a 2½-yd. Motomixer, Hercules powered, on a Chevrolet four rear wheel drive truck; and 3½S, 5S and 14S mixers on two wheels. A full line of Speed-Prime centrifugal pumps, 2 to 8 in., was on display. Other products shown included a representative selection of chains, conveyor idlers, and a new screw conveyor for bulk cement and a truck power takeoff.

Chevrolet Motor Div., General Motors, Detroit, Mich.

The Chevrolet exhibit occupied a large section of the second floor. Designed to indicate the adaptability of Chevrolet trucks to a great variety of construction equipment, as well as construction haulage, the display featured many types of equipment mounted on both conventional and cab-over-engine Chevrolet trucks, such as transit mixers, dump bodies, tanks, and other special units. Thornton Tandem, Duplex and Asam four-wheel drives were also shown on Chevrolet trucks. A station wagon featured a turret top and full-opening rear. Pictures and part of the voice comments from the New York Worlds Fair "World of Tomorrow" entertained the crowd.

Chicago Pneumatic Tool Co., New York, N. Y.

A hit of the show was the new Chicago Pneumatic 900-ft. portable compressor, powered by a 190-hp. diesel engine. This is claimed to be the largest portable compressor ever built. Other new portable compressor models in the Chicago Pneumatic display included the 210-ft. streamlined model on pneumatic tires, powered by a Hercules gasoline engine; and the little 105-ft. streamlined model also gasoline powered and on rubber tires. In the small tool line Chicago Pneumatic showed several new models, including the No. 200 combination electric hammer drill which will accommodate either a ½-in. hammer drill or a ¼-in. electric drill; a new 3 GS gas tamper and clay digger, which weighs 67 lb., equipped with a single cylinder Chicago Pneumatic gas engine air-cooled; and an electric sump pump, fully inclosed, rated at 100 gpm at 40-ft. head; an electric vibrator (brand new) of the internal type powered by a small Onan gas electric generator. Other products shown were the G200 wagon drill, the full line of air driven concrete vibrators, rock drills, paving breakers, tampers, electric tools, grinders and sanders, air clay diggers, air grinders and the No. 7 plug and feather drill also the No. 7 portable air-driven sludge pump rated at 65 gpm at 50-ft. head.

Scotch lassies and new Cletracs shared honors in the Cleveland Tractor Co. exhibit.

Chicago Rawhide Mfg. Co., Chicago, Ill.

Hammers, mallets, joint coverings and oil seals of rawhide leather were displayed with belts, belt lacing, and rawhide patching materials.

Clark Equipment Co., Buchanan, Mich.

An automatic booster unit was shown installed in a Chevrolet truck to assist the regular engine over hills and on heavy pulls. This small engine is equipped with Bendix engine control and located in rear of cab.

Clay Products Association, Chicago and Pittsburgh

Literature and displays were shown of clay products for highway construction.

Cleaver-Brooks Co., Milwaukee, Wis.

Featured in this display was the Model 2 pumping Cleaver bituminous booster for heating tanks of pumpable material without use of steam. It has an adjustable oil burner, and includes a 300-gpm Kinney pump, powered by a Waukesha gas engine, and is ready for mounting on a truck. Also shown was the Cleaver Dreadnaught, a streamlined truck-mounted combination steam tank, car heater, and booster on an International cab-over-engine truck. A third Cleaver unit on display was the portable trailer model steam tank car heater, equipped with a boiler for 125-lb. working pressure, developing 28 boiler hp., a return condensate system. This little rig is claimed to steam a car in 10 hours with only 5 gal. of makeup water. It is a neat, streamlined model.

Cleveland Rock Drill Co., Cleveland, Ohio

A wagon drill with a new recoil device for holding the bit to the work was shown on an adjustable carriage for angle drilling. Four different sizes and types of paving breakers, a sheeting driver, digger, tamper, drills, grinders, and pumps were displayed to represent the products of the company.

Cleveland Tractor Co., Cleveland, Ohio

The Cleveland Tractor space was full of Scotch lassies, but a second inspection revealed that there was also a full line of Cletrac streamlined trac-

tors on display. Included in the list was the big Model FD 95-hp. diesel, equipped with a scraper pusher front, pulling a Heil cable scraper; the Model AG 27-hp. gas driven, carrying a Gar Wood hydraulic bulldozer; the Model HG 31, a 16-hp. gas model with a Sargent sidewalk snow plow; the Model BG, a 37-hp. gas with a Cletrac front end ¾-yd. bucket loader and a rear scarifier attachment, both hydraulically operated. Also shown were two Model BG 61-hp. diesels, one with a cable operated Heil Trailbuilder and the other with a Sargent overhead shovel equipped with a 1¼-yd. snow bucket, cable operated.

Cleveland Trencher Co., Cleveland, Ohio

A track-type machine for push or pull backfiller and tamper operation was shown powered with a Hercules engine. It is arranged so that it can be used for pipe placing to make a one machine job of laying and covering pipe.

Coffing Hoist Co., Danville, Ill.

A ¼-ton electric Quik-Lift hoist to represent this newly developed line with capacities up to 2 tons, ¾-ton to 15-ton ratchet hoists a 1½-ton spur geared ratchet lever hoist, and a load binder and line puller were displayed.

Commercial Investment Trust, Inc., New York, N. Y.

Literature and information concerning deferred payment on equipment was displayed.

Construction Machinery Co., Waterloo, Iowa

A different portable batching plant was shown employing a single movable hopper on a monorail which loads under various compartments and discharges at the outside of the batcher plant. A low-priced house builder's special saw table and a new tilt-top saw rig were shown. Also in the new equipment division was a 6-in. well-point pump with Hercules power. A two-stage convertible pump for jetting or unwatering was shown and 1½-in. and 3-in. conventional centrifugal pumps. A 6-cu.ft. bituminous mixer, semi-trailer equipped with LeRoi power, and 3½ and 10S concrete mixers semi-trailer mounted for side or end discharge were shown. A two-drum welded frame hoist LeRoi powered was displayed.

Continental Motors Corp., Muskegon, Mich.

Emphasizing the interest of the highway builder in airport construction a 40, 65, and 75-hp. horizontal opposed aircraft engine and a 7-cylinder radial type 240-hp. aircraft engine were shown. Fuel injector or carburetor for gasoline were optional equipment. A Tiny Tim gas-powered battery charger and a 2 to 6-kw. electric generator and an automatic engine for air conditioning were part of the exhibit.

F. D. Cummer & Sons Co., Cleveland, Ohio

Literature on all types of asphalt plant equipment was displayed for information of visitors.

Cummins Engine Co., Columbus, Ind.

Supercharged 125-hp. and 200-hp. diesels weighing but 10 lb. per horsepower featured this exhibit. Other four-cycle six-cylinder diesels were shown from 15 hp. to 250 hp. A Twin Disc marine reverse gear was displayed and a 50-kw. diesel generating set with G.E. equipment was shown.

—D—

D. A. Lubricant Co., Inc., Indianapolis, Ind.

The booth was full of all kinds of D.A. greases and lubricants for tractors and trucks, and an illuminated sign said "24 hour delivery to any point in the United States."

Davey Compressor Co., Kent, Ohio

A 105-cu.ft. Davey air-cooled compressor was shown driven by a Davey split-shaft power takeoff on a 1½-ton Chevrolet truck in the Chevrolet exhibit.

Dempster Bros., Inc., Knoxville, Tenn.

The new Model 300 LF Dempster Dumpster 3-cu.yd. box was shown on an International truck. This model lifts the usual Dumpster box well over the back wheels to eliminate the overhang and distribute the load more evenly. It dumps about as in earlier models.

Detroit Harvester Co., Detroit, Mich.

In the Chevrolet exhibit Detroit Harvester showed a 5-ft. push-type sweeper operated by a power takeoff from truck. Also shown was an elevating tailgate to lift loads to the body level, operated by winch from power takeoff. To show the mechanics of the power takeoff an opened-up model was displayed.

Diamond Iron Works, Inc., Minneapolis, Minn.

A 24x36-in. anti-friction bearing overhead suspended jaw crusher with welded structural steel frame and rubber mounted flywheel, and a 10x24-in. roller bearing jaw crusher featured the exhibit. Also shown were triple deck vibrator screens, a belt conveyor carrier, and Mahr torches and burners for general heating purposes.

Diamond T Motor Car Co., Inc., Chicago, Ill.

The largest gasoline powered truck exhibited at the show was 12-ton six-wheeler Diamond T with a gross rating of 40,000 lb. powered by a Hercules engine and having twelve forward and two reverse gears driving on both rear axles. It was shown with an 8-cu.yd. Gar Wood dump body. Also on display was a 16,000-lb. road builder's truck with 140-in. wheelbase, a Hercules engine, and a 2½-cu.yd. Anthony dump body.

Dimick-Mosher Products Co., Boston, Mass.

Semi-circular Kradle invert vitrified clay pipe for under-drainage of highways was shown with a working model showing drainage through subgrade materials and into pipe.

Dodge Bros. Corp., Detroit, Mich.

Dodge featured a 4-cycle diesel engine with Excello injector pump for installation in their 3-ton trucks. Also on display were: a 3-ton gasoline engine truck 152-in. wheelbase and a 4-cu.yd. Wood body, a 1½-ton cab over engine type with 105-in. wheelbase for close quarter use equipped with Anthony body and hoist, and a conventional 133-in. wheelbase 1½-ton truck with Heil body.

Dow Chemical Co., Midland, Mich.

Dowflake calcium chloride and its application to road construction, maintenance, and ice control were featured in this exhibit. Other Dow products were shown.

Duplex Machinery Co., Battle Creek, Mich.

Shown in the Chevrolet exhibit was a flexible four-wheel drive rear assembly featuring two driving rear axles powered by an over-running clutch providing positive traction on each axle separately. Sixteen forward speeds are provided by electrically controlled vacuum shift. Bendix power brakes are provided on all wheels.

—E—

Eagle Crusher Co., Inc., Galion, Ohio

A portable truck loader mounted on a Chevrolet truck and operated by one man from a power takeoff was shown in the Chevrolet exhibit. Crowd into the material is obtained by traction disks applied to the tires, with power from the takeoff. A 10x20-in. SKF bearing jaw crusher was also shown representative of the line of portable crusher equipment.

Edison-Splitdorf Corp., West Orange, N. J.

Glow plugs for starting diesel engines were featured in the exhibit of spark plugs, ignition coils, switches, and magnetos.

Electric Tamper & Equipment Co., Ludington, Mich.

A 10-ft. vibratory paving tube was shown with a vibratory hand screen for paving work. An internal type vibrator with accessory clamp for form and joint vibration was shown. A gas-engine driven flexible tube type hydraulic vibrator with accessories was shown as well as one- and two-man electric internal vibrators, and backfill tampers. Three-quarter-kva. and 2-kva. gas-electric generators were displayed.

Electric Wheel Co., Quincy, Ill.

Wheels of all kinds, large, small, steel-tired, pneumatic, trolley, all types for construction equipment were shown in this exhibit.

Elgin Corp., Elgin, Ill.

A three-wheel front dump, Hercules powered motor pick-up street sweeper was shown in a 9-ft. and 5-ft. swath width. Also displayed was the fully inclosed self-loading sanitary garbage collection unit, a 13-cu.yd. "Refuse Getter" for truck mounting.

E. D. Etnyre & Co., Oregon, Ill.

In the Etnyre space was a new streamlined 1,000-gal. Blacktopper bituminous distributor, mounted on an International truck, featuring a non-drip spray bar and Vacu-flo cleaning, powered by a LeRoi gas engine. Mack Trucks, Chevrolet and Thornton Tandem Co. also showed Etnyre Blacktoppers, from 800 to 1,600-gal capacity, mounted on their trucks.

Euclid Road Machinery Co., Cleveland, Ohio

Rising high above a constant crowd of admirers was the new Model L 18-yd. Euclid wagon and haulage unit, a bottom-dump semi-trailer hauled by a Euclid 200-hp. four-wheeled power unit, Cummins diesel drive, air operated. The unit is a fast mover, rated at a top speed of 25 mph. Another new Euclid product is the Model M 10-yd. hydraulic scraper, a two-wheeled earthmover pulled by a special Waukesha gas powered two-wheeled tractor rated at 100 hp. A feature is tight linkage between scraper and tractor, eliminating any tendency to tilt the front end. Also shown was the Euclid Model K 9-yd. bottom dump two-wheel wagon unit hooked to a 100-hp. four-wheel tractor, Waukesha gas drive. A fourth Euclid unit on display was the Model FB rear-dump 10-yd. wagon, mounted on a Euclid truck powered by a Cummins 150-hp. diesel engine. The cutaway model of the Euclid double reduction drive axle, with planetary final drive, used on all of Euclid's equipment, was shown in operation.

Evans Products Co., Indianapolis, Ind.

Lusterlite highway markers and reflector buttons were shown with steel standards for supporting roadside signs.

Everhot Mfg. Co., Maywood, Ill.

A complete showing of branding equipment for marking contractors' tools, planking and equipment, was shown in both gas and electrically heated branding torches.

—F—

Fairbanks-Morse Co., Chicago, Ill.

All types of magnetos for industrial and automotive engines were displayed.

Fate-Root-Heath Co., Plymouth, Ohio

A 5-ft. blade highway shoulder mower on a rubber-tired tractor, Hercules powered, was displayed.

Fawick-General Corp., Akron, Ohio

"Airflex" clutches, a new development, for uniform pressure under all conditions, including misalignment and angularity, and eliminating the usual toggles featured the display. The new type clutch resembles a flattened pneumatic tire, and can be installed on either the inside or outside of the drum. Several of the big shovel manufacturers are adopting this type of clutch.

Foote Co., Nunda, N. Y.

The standard 27E Multi-Foote paver created considerable attention. Also shown was the Adnun Blacktop Paver, Buda gas powered, with a new electric screed heater, which gets its power from a Peerless 3.75 kw. gas-generator. Foote also displayed the Multi-Sweep, a vacuum sweeper for warehouses, walkways, etc., gas powered and hand propelled.

Ford Motor Co., Dearborn, Mich.

Shown in the display was a Ford 95 truck with 6-cu.yd. Gar Wood dump body mounted on Thornton Tandem drive, also equipped with Pneu-Hydro road planer with a 10-ft. blade. A Ford 85 truck was shown with 2-cu.yd. dump body and Anthony snow plow. Another Ford 95 chassis was mounted on the Marmon-Herrington all-wheel drive. A V-95 cab-over-engine style was shown with a Heil dump body and another with a Galion body and Galanot-Watson Tyr-Trac for truck operation over soft material. A station wagon was shown on standard equipment.

Four Wheel Drive Auto Co., Clintonville, Wis.

FWD featured a test drill rig suitable for churn drilling, rotary boring and soil sampling. This equipment was mounted on the standard Four Wheel Drive truck but with its own power so that it can be separated from the truck for independent operation. A heavy duty transmission, opened up to demonstrate the constant mesh gears, easy shifting and servicing without removing case from truck, was shown. Standard equipment was shown in a dump truck arranged with 24-in. clearance under the center of truck for operation of a maintenance blade. This truck, equipped with Waukesha engine, was shown with a St. Paul 12-ft. truck patrol grader blade.

Freuhauf Trailer Co., Detroit, Mich.

Looking big enough to move the world was the Model G25 Freuhauf Carryall low-bed trailer, a 25-ton capacity unit, of the semi-trailer type, mounted on eight wheels on two axles at the rear, with a differential dual wheel arrangement, specially designed for shovels and road equipment. Of considerable interest was the Pressurelube portable electric grease gun, battery operated, on a four-wheel hand truck. The battery is charged by direct plugging into any 110-volt circuit, the pressure is adjustable from 1,000 to 12,000 lb. per sq.in., and the unit mounts two containers, one for heavy and one for light grease. A 10-yd. Anthony dump body was shown on a Freuhauf semi-trailer and Chevrolet truck.

Fuller Mfg. Co., Kalamazoo, Mich.

Opened-up sections of medium and heavy duty transmissions were shown featuring sturdy construction, quietness, and ease of operation.

—G—

Galion All Steel Body Co., Galion, Ohio

Hoist units were shown. A 10-in. cylinder underbody hydraulic hoist requiring only 14 in. mounting height for a heavy duty lift, and a 6-in. cylinder underbody conventional type operating on low oil pressure, were shown. A dump body and hoist and Galanot-Watson Tyr-Trac for truck operation on mud, sand, and snow were shown in the Chevrolet exhibit.

Galion Iron Works & Mfg. Co., Galion, Ohio

Galion enters the scraper field with the new Cyclone, a 15-yd. front load and front dump unit, air and hydraulic control, mounted on three wheels and carrying an integral International diesel power unit. The rear drive wheels mount 18x24-in. pneumatic tires. Galion graders on display included the No. 101 motor patrol, tandem drive, International diesel power, full hydraulic control; and the Model 201 motor patrol, Oliver gas power, tandem drive, also full hydraulic control. Galion rollers include the 5 to 8-ton tandem models, hydraulic steering, Hercules gas power; the 5-ton portable roller, with rubber front wheels, Hercules gas powered; and the Galion tamping roller, in one, two, three, and four sections. Also shown was a neat little widening and trench roller, Hercules gas powered, for working in narrow spaces; a 3 to 5-ton 3-wheel roller, International gas powered, hydraulic steer; the 8-ton Warrior 3-wheel roller, Hercules gas powered and hydraulic steer, and the 12-ton Chief, a three-wheel type, hydraulic steer and Hercules gas power.

Gardner-Denver Co., Quincy, Ill.

A cutaway compressor showed general operating features. An 85-ft. streamlined outfit on two wheels demonstrated the compressor line, while a pneumatic-feed wagon drill on rubber tires, sinkers, breaker, and spade featured the drilling equipment. Three and 7-hp. air hoists were shown.

Garlock Packing Co., Palmyra, N. Y.

The general line of packings applicable to portable equipment was shown featuring Garlock Klosure. Molded Neoprene and rubber units of packing were displayed.

Gatke Corp., Chicago, Ill.

Molded asbestos brake cylinder blocks used also for clutch gears with molded teeth were shown along with molded and woven brake lining. Fabric bearings were shown as a substitute for metal.

General Excavator Co., Marion, Ohio

General limited its display to the Model 307 shovel, a ¾-yd. rig with an all-welded boom, powered by a Buda gas engine.

General Motors Sales Corp., Detroit, Mich.

The Diesel Engine Division used the interesting animated Robophone display, shown at the New York World's Fair last year, for explaining the operation and characteristics of the new 2-cycle General Motors diesel engine. On display were the new engines, all 2-cycle operation, in 1, 3, 4 and 6-cylinder models, some as power plants, rated from 15 to 150 hp. A check revealed that 23 General Motors diesel engines were installed in equipment shown elsewhere on the floor. Also shown was a 10-kw. Delco generating set with a single cylinder General Motors diesel engine drive. The Hyatt Bearing Division of Harrison, N. J., displayed anti-friction bearings of all kinds.

General Motors Truck & Coach Co., Pontiac, Mich.

General Motors Truck announced the early introduction of a complete new line of six-wheel trucks, in 26 models from 18,000 to 50,000 lb. gross. The new General Motors 2-cycle diesel engine will be used in 18 of the models, though gas power is optional throughout. Half of the models will be in the cab-over-engine type, and the other half in conventional style. Trailing axle types will be used in 13 models; dual drive in the remaining 13. A 116-in. wheelbase truck with 110-hp. G-M diesel engine was shown with a Gar Wood 4-cu.yd. body and hoist.

Geneva Metal Wheel Corp., Geneva, Ohio

Steel rim wheels and pneumatic tired wheels and rims suitable for any type of equipment were displayed.

Gilson Bros. Co., Fredonia, Wis.

A 3½S tilting mixer, semi-trailer mounted and a 7S non-tilting mixer semi-trailer mounted with LeRoi power constituted the floor display of this company.

W. S. Godwin Co., Inc., Baltimore, Md.

Godwin was on hand with self-aligning and self-fastening concrete joint assemblies, with and without joint filiers, in which the filler and shield are supported by a steel assembly. Also shown was the Godwin load transfer trusses with Redwood joint fillers.

Good Roads Machine Corp., Kennett Square, Pa.

A lot of maintenance equipment was shown in this exhibit. Center blade maintainers were shown on McCormick-Deering Farmall tractors with a scarifier, patch roller, and wire brush accessories. A V-type and full hydraulic control wing snow plow and motorized 6-cu.yd. sand spreader were mounted on a General Motors truck. Sand and chip spreaders, reversible blade plows and a roller wheel device for trucks for use on cold patches were also shown.

Gorman-Rupp Co., Mansfield, Ohio

Small to large pumps of the Gorman-Rupp line were demonstrated by 1½-in. to 3-in. self-priming centrifugals with air-cooled engines and up to 125,000-gph. centrifugals for all pumping requirements. A high pressure road pump and a jetting pump with Hercules power were also shown.

W. E. Grace Mfg. Co., Dallas, Texas

An 8-ft. trailer type street sweeper, powered from road traction with a three-speed transmission, and a tank car heater, powered by Continental engine, on wheels for easy movement, constituted the exhibit.

Gravely Motor Plow & Cultivator Co., Dunbar, W. Va.

A 5-hp. tractor 4-cycle air-cooled engine, two speeds forward and reverse, was shown for operation of sickle or rotary mower up to 75 in. Sweeper, sidewalk snow plow, and other attachments for this type machine were demonstrated.

Gruendler Crusher & Pulverizer Co., St. Louis, Mo.

The only equipment shown was the No. 3XF-B ring hammer crusher for gravel and rock. The full line of Gruendler crushing and screening equipment was presented in literature and photo displays.

Gulf Oil Corp., Pittsburgh, Pa.

Literature on petroleum products for construction work and an illuminated

map of the Pennsylvania Turnpike, where lots of Gulf products are used on equipment, were shown in this exhibit.

George Haiss Mfg. Co., Inc., New York, N. Y.

The feature of this exhibit was a high-powered digging clamshell bucket with unusually heavy digging arms and reeved with an 8-part line. Sheaves are in the clear above the counterweight to prevent dirt filling in and for easier reeving. Pick point and chisel point teeth and photos of the new Haiss "Wheel 75 Loader," an automotive type truck loader, were shown.

—H—

Halliburton Pressure Grouting Corp., Duncan, Okla.

Literature and pictures showing work in control of groundwater and consolidation of foundations by grouting were displayed.

Hamilton Mfg. Co., Two Rivers, Wis.

For the designer Hamilton showed drawing tables, drawer units, filing system, and featured new fluorescent drafting table lights.

Harnischfeger Corp., Milwaukee, Wis.

Featured the new P&H Model 55 shovel, 1½-yd. capacity, with hydraulic control on all motions. The shovel is all-welded throughout, has a box boom and two dipper sticks, and is powered by a Caterpillar D13,000 diesel engine, and carries hook rollers in addition to full live roller swing circle. Off to one side was a working unit showing the hydraulic control equipment for the ¾-yd. shovel. Also shown was the Hansen 300-amp. welder of the Smooth-Arc line of welding equipment.

Heil Co., Milwaukee, Wis.

Heil was proudly displaying its new Dig-N-Carry Motor Scoop, a hydraulic operated 8-yd. dirt mover with an integral power unit, a Case gas engine on the rear of the scraper. The unit is mounted on four wheels, two front and two rear, steers at the front, is all welded throughout, and is controlled from and operated at the rear. The biggest unit in the Heil display was the 16-yd. Dig-N-Carry trailer scoop scraper, hydraulic control, hooked to a brand new design Walter four-wheel four-point positive drive tractor, a high-speed unit. Another big Heil dirt mover was the 12-yd. Dig-N-Carry cable scoop scraper, hooked to a Cletrac FD 95-hp. tractor. This is a four-wheeled unit mounted on rubber tires. A third Heil scraper on display was the 6-yd. Dig-N-Carry hydraulic scoop, mounted on six wheels, and featuring controlled depth of spread. Also shown was the Heil semi-trailer dump truck, operated by a hydraulic hoist. The Heil hydraulic operated Trailbuilder was shown on a Cletrac diesel tractor.

Heltzel Steel Form & Iron Co., Warren, Ohio

Heltzel has developed a couple of new type dowel bars for concrete paving. One type consists of a structural member, placed below the subgrade across the joint, carrying vertical tension members on I-bar rockers which hold the slab down, and prevent curling of the slabs at end joints. Another type has no vertical tension member. Heltzel also showed his conventional type shear plate dowel. A new grooved strip, developed for sectional slab construction on the Pennsylvania Turnpike, uses links to tie the strip to the concrete, then as the adjoining slab is laid additional links tie the two slabs together. Heltzel showed a new 1-yd. bottom-dump bucket, adjustable for maximum width of openings, which can be set for forms as narrow as 4 in. A safety feature is hand holds at the bottom of the frame for spotting. Two Flexplane finishing machines were on display, one a gas-electric model with electric vibrating screen; vibration and lighting are also electric. This machine is designed to surface no slump concrete, and operates through a hydraulic lift. Another finisher was the Flexplane diesel powered straight mechanical finisher. Other Heltzel products on display included the bulk cement weighing batcher with a Kron scale, featuring a new type rubber water-tight valve, simply a rubber sleeve squeezed by a bar to break up lumps in the cement, and Heltzel claims it is absolutely non-clogging; a full line of road, walk and curb forms, both for concrete and asphalt work; and an aggregate weighing batcher with a Kron dial scale, in which cement, sand and stone are all weighed on the same scale.

Hercules Co., Marion, Ohio

Hercules showed a small model of its three-wheel tandem Ironeroll roller, also a unit-cast transmission for the Hercules 10-ton roller.

Hercules Motors Corp., Canton, Ohio

Hercules engines, 27 of them, were displayed. Included were 2, 4, and 6-cylinder models of both gasoline and diesel engines. A sectioned diesel was shown to demonstrate operation. The Hercules diesel "Power Package" replacement engine for Ford trucks a[nd] a new flat-type diesel were shown w[ith] a hand cranking 2-cylinder diesel a[nd] new 2-cylinder gasoline engine. M[ost] equipment in other parts of the Sh[ow] was powered by Hercules.

Hercules Steel Products Corp., Galion, Ohio

A split-shaft power take-off and rugged hydraulic hoist cylinder assembly were displayed with a complete hoist and dump body shown on a Chevrolet truck.

Hetherington & Berner Co., Indianapolis, Ind.

Featured the Deister Plat-O vibrating screen, a complete unit with chutes and frame completely inclosed, V-belt drive. Also shown was a 2,500-lb. pug-mill mixer, separate drive; and the Fluidometer asphalt metering device. A Kron scale with the new type overhead suspension, as used on all Hetherington & Berner equipment, was also on display.

Frank G. Hough Co., Libertyville, Ill.

In the Hough display was a tractor sweeper mounted on an Allis-Chalmers tractor, carrying a 30-in. brush, 6 ft. long, driven direct from the engine crankshaft; the Hough Hi-way mower, equipped with a hydraulic lift on an Allis-Chalmers 4-wheel tractor; and the Hough hydraulic tractor shovel, 1½-yd. high lift model on an Allis-Chalmers tractor. A ¾-cu.yd. shovel (high lift type) was shown on an International diesel tractor and a ½-cu.yd. shovel on an International gas tractor. A pickup street sweeper, 6-ft. swath with gutter brush, three-wheel design and rear steering powered by International engine; an 8-ft. traction-driven reversible road sweeper with a Ford transmission, and operating models of the Hough high shovel, motor-driven brush street sweeper, and combined sweeper and blower were also displayed.

Huber Mfg. Co., Marion, Ohio

Huber has a new 8-ton tandem roller, Buda gas powered, featuring all anti-friction bearings, hydraulic steering, three speeds, a high frame that permits working close to curb, and controls that can be operated from either side. Another Huber roller shown was a 10-ton size, powered by Caterpillar diesel, also featuring hydraulic steering and equipped with a scarifier; this is a 3-wheel type. In graders, Huber displayed the No. 4 superior power grader, Buda diesel

power, an inclosed cab, 4-wheel tandem drive, all hydraulic control; and the Huber Maintainer, Buda gas engine drive with a 9-ft. blade.

—I—

Independent Pneumatic Tool Co., Chicago, Ill.

The general line of grinders, saws, and drills, was represented with the electric Thor Nado hammer. Stopers, clay digger, tamper, sheeting hammer, breakers, and a full line of hand rock drills were shown with hand and pneumatic feed drifter drills and the No. 85 spring-handled sinker drill.

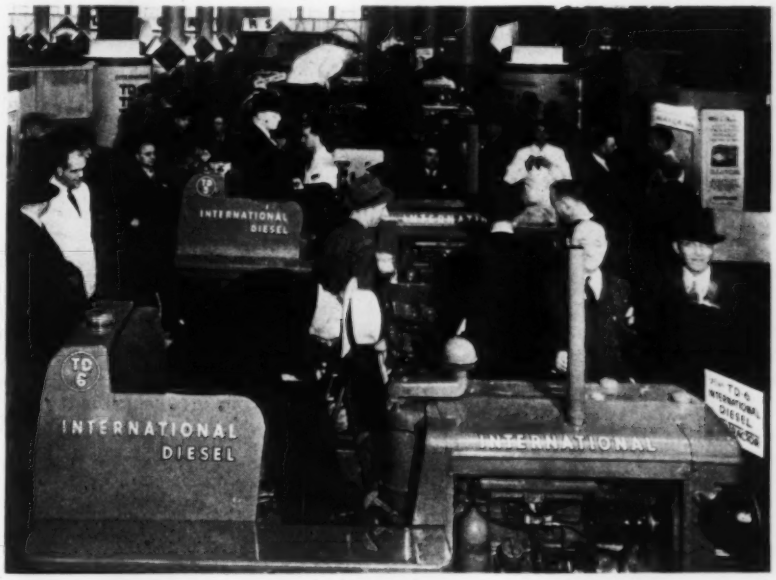
Insley Mfg. Co., Indianapolis, Ind.

A brand new shovel is the Model HK-12½-yd. excavator, with independent chain crowd, welded box boom, two dipper sticks, Buda gas powered, featuring all-inclosed gears; it weighs 3,000 lb. more than previous models of this size. A new type of concrete receiving hopper, just put out by Insley, received lots of attention. It is a flat type hopper designed for use with ready-mix or transit-mix trucks; it lays flat on the ground and can be charged direct from the mixer truck without use of a ramp or other elevation, and then can be picked up by a crane and used as a regular dump bucket. Insley also showed its standard 1-yd. round type concrete bucket, bottom dump, and a 6-ft. pneumatic tired concrete cart, featuring a rocker dump principle, with rockers on the front of the cart.

International Harvester Co., Chicago, Ill.

Four new International tractors were shown: the TD6, TD8, TD14, and TD18, all diesel featuring power-actuated steering clutches and easy starting coupled with the usual unit construction and full pressure lubrication. Other engine units showed the complete field coverage from 20 to 100 hp. A TD18 tractor carried a Bucyrus-Erie Bullgrader operated by Bucyrus-Erie planetary winch and a smaller tractor carried a hydraulic lift B-E Bullgrader and a Carco winch for scraper operation. A new D18 diesel on pneumatic tires powered a Galion Cyclone 15 self-loading push-type, scraper also on pneumatic tires.

In truck units International showed several interesting models; a 3½ to 7-ton 6-wheeler rigged to demonstrate flexible rear axle carrying a 7-cu.yd. Aristocrat dump body with a Wood hoist; a 4-ton diesel engine job with overdrive; a gas-powered chassis opened to show general frame construction; a 4 to 6-ton diesel unit cab-over-engine style occupied a central place; a station wagon and a body for transporting workers and tools on smaller trucks completed this exhibit. In road maintenance equipment International showed a TD18 tractor with hydro-operated Frink snow plow; a Snogo unit on a TD14; an Austin-Western power grader and a 2 to 3-ton truck with St. Paul blade scraper and dump body.



Tractors lined up in rows in the International Harvester display.

In the miscellaneous equipment were a rubber-tired highway tractor with a 5-ft. mower blade, a 315-cu.ft. Schramm compressor with diesel engine, and two direct-connected generators, one a 31-kva alternating current unit.

International Vibration Co., Cleveland, Ohio

Shown on the floor were a full-width paving vibrator powered by a Wisconsin engine, a pneumatic vibrator for beam and rail work, an electric vibrator for patching work, and a platform vibrator powered by a Briggs-Stratton motor.

Iowa Mfg. Co., Cedar Rapids, Ia.

One of the outstanding units on the floor was the new Iowa all-electric, push-button control gravel plant with individual motor drive. It is a complete portable plant built in two sections, and weighs 56,000 lb. It is equipped with anti-friction bearings throughout and with permanently sealed troughing rollers on the conveyors. There are seven individual motors on the plant. Although the plant can be run by commercial power, it is designed primarily for roadside work and for such installations Iowa has built up a portable generating plant powered by 150-hp. Caterpillar diesel engine running a 125-kva Electric Machinery Mfg. Co. generator, 220-440 volts a.c. Another new Iowa idea is the Kubit rock and gravel crusher that is a distinct departure from the usual hammermill. The pieces of rock are broken by being thrown at high velocity against fixed breaker bars and the speed of operation governs the size of the finished product. The medium-sized model shown has a capacity of 25 to 35 tons per hour of 1-in. material. Iowa also showed the 3,000 lb. portable asphalt plant, all electric power and control, including an electric timing device, built in two units for easy portability; a 60x40-in. dryer is part of the outfit.

—J—

Jaeger Machine Co., Columbus, Ohio

Newest in the Jaeger line is the screw concrete spreader that made such a hit on the Pennsylvania Turnpike last fall. It is designed for paver and truck mixer operation, contains a reversing screw that spreads material from form to form. It is designed to work with dry concrete, and it strikes off the bottom course for laying the mesh. It is powered by a Hercules gas engine and is self propelling. Also shown was the Jaeger-Lakewood finisher, "the De Luxe finisher for Superhighways," featuring a quick crown change screed, Hercules gas powered; and the Jaeger Finisher for road widening and sidewalk work, Wisconsin gas powered. For bituminous work Jaeger

featured two units, one the Jaeger Bituminous Paver, equipped with the 1940 automatic blade leveler, claimed to give the "advantage of forms without the cost," mounted on crawler treads, Hercules gas powered. The other bituminous machine was the Roadbuilder, self-propelled, powered by a Caterpillar diesel engine, equipped with wing blades and screw gatherer at the front. The machine is mounted on crawlers.

Also on display was the Jaeger adjustable material spreader, truck drawn; the Jaeger form tamper, powered by a one-cylinder gas engine, mounted on one rubber-tire wheel for moving; and a full line of Jaeger road forms. The Jaeger display of concrete mixers included a 2½-yd. transit mixer, separate gas engine drive, on a Chevrolet truck, with the Thornton Tandem drive; a 3½S non-tilt two-wheel mixer, hopper charged; a 5S two-wheel non-tilt mixer, skip charged; a 10S two-wheel mixer, skip charged; a 3½S two-wheel tilting mixer. Two hoists were shown, the Dixie Special two-drum Hercules gas powered, and the Model 2-C-1 two-drum Waukesha gas powered, designed especially for construction work.

Pneumatic-tired concrete carts and 6½ and 8 ft. sizes were shown, as were also models of concrete towers and chutes. The full line of Jaeger pumps was on display, including the 3-in. caisson type, a high-pressure triplex road pump on steel wheels, and a wide variety of self-priming centrifugal pumps, single and multiple stage, mounted and unmounted, from 1½ in. to 10 in. in size. Also in the Jaeger display was a device for quick determination of moisture in aggregates, manufactured by the Moisture Flask Co., Quebec, Canada.

C. R. Jahn Co., Chicago, Ill.

Literature and pictures showing the heavy-duty trailer products of the company were displayed.

Jeffrey Mfg. Co., Columbus, Ohio

Representative of their general line of equipment, Jeffrey showed a 36x 24-in. swing hammer pulverizer, self-aligning conveyor belt idlers, and steel thimble roller chain.

C. S. Johnson Co., Champaign, Ill.

Showed a model of the Johnson Dutch Mill, a complete bulk cement storage and batching plant for roadside installation. It is fabricated in sections for handling and shipping. Photos and literature were available on the complete line of Johnson concrete batching plants.

—K—

Killefer Mfg. Co., Los Angeles, Calif.

Killefer featured a five-tooth heavy duty revolving ripper, on which a hand screw controls the depth of cutting, and tripping of a lever permits the frame holding the teeth to revolve to clear obstructions. Also shown in the Killefer booth was a 1-yd. revolving scraper, 6 ft. bowl width; the Killefer tandem road disk with offset disks for mixing material in place; the Killefer wire layer, two-wheel model which buries wire and cable without digging or backfilling; and spring-toothed road material mixers.

Kinney Mfg. Co., Boston, Mass.

Kinney has improved its bituminous distributor. On display was a 1,000-gallon Type CB, both air and manual control, powered by a Ford V-8 engine with three speeds on the pump, all mounted on a six-wheel bike truck. Also shown was a gas-driven portable emulsion unit for cold patching and a steam-jacketed asphalt pump.

Klauer Mfg. Co., Dubuque, Ia.

Four Snogo rotary snow plows were on display, featuring all hydraulic control throughout. The model LTR was mounted on a Marmon-Herrington four-wheel-drive truck, with the rotary plow being driven by an International gas engine. Mounted on an International truck was a model LMU Snogo with truck loading attachment, International gas engine powered. A model LCR Snogo was mounted on an International truck, auxiliary gas engine power. Probably most spectacular in appearance, however, was the model CTR Snogo, mounted on an International V14 diesel tractor, with diesel auxiliary power for operating the snow plow.

Koehring Co., Milwaukee, Wis.

Pride of the Koehring Co. this year is the new Model 604 1½-yd. shovel, all new from dipper teeth to exhaust pipe. It is a streamlined, simplified, trim-looking unit that has been stripped of all gadgets. It is powered by a Hesselman oil engine, has a welded box boom, and features include a floating shipper shaft that has no drive through it, simple clutches, three out of five of which are interchangeable, circulating oil through all gear cases, single chain crowd, vacuum boosters on all but the swing clutches, sealed roller bearings on the main drum, live boom and clean tracks. The big 34E "Twinbatch" double-drum paver, gas powered and air controlled, introduced at the Clevela show two years ago, was also on d play. Other concrete equipment cluded the Koehring longitudinal isher, designed to take the transve corrugations out of concrete pavi and 3½S mixers, trailer models, both tilting and non-tilting styles, an a 10S non-tilt trailer mixer. Al shown was a 6-ft. non-tilting plast mixer and a 6-ft. bituminous mix with heater.

In dirt moving equipment Koehrin displayed the Trail Dump, a 10-yd. wagon hooked to a Koehring four-wheel tractor, with bottom dump wagon, cable wind, mounted on rubber tires; the Koehring 6-yd. Dumptor unit, mounted on a Koehring tractor with the new General Motors two-cycle diesel power; and the big Koehring wheeled scraper, 12½-yd. capacity, pulled by a Koehring four-wheel tractor, General Motors diesel power, equipped with air brakes. This scraper, cable operated, features level cutting and positive ejection of material. Also shown was the Koehring mud jack, a four-wheel rig on rubber tires for pumping material under sunken pavement slabs.

Koppers Co., Pittsburgh, Pa.

Literature and Tarmac were shown to visitors to this booth.

—L—

Laclede Steel Co., St. Louis, Mo.

Literature and models represented the complete highway products available from this exhibitor.

LaPlant-Choate Mfg. Co., Inc., Cedar Rapids, Ia.

LaPlant-Choate showed plenty of dirt moving equipment. Brand new is the 16-yd. positive push-out Carrimore scraper, cable operated, featuring a high lift apron, 8 ft. lifting height, with positive cable control closing. The apron lifts up and out, and the ejector travels the full length of the bowl. This was hooked to a Caterpillar D8 tractor and operated through a Caterpillar power control. It is mounted on four wheels. Another LaPlant-Choate scraper is the 4-yd. Carrimore two-wheeled model, with removable axle. The LaPlant-Choate tamping roller on display features removable tamping feet, held by one bolt, permitting easy replacement. The big Model B81 bulldozer was mounted on a Caterpillar D8 tractor; it has a 33-in. lift; operates under hydraulic control, and features a three-section reversible cutting edge. Among smaller

bulldozers, the B21, also hydraulic control, was mounted on a Caterpillar D2 tractor. This machine had a 25-in. lift; the blade can be locked in any position. Also included in the LaPlant-Choate display was the Model 4R Trailbuilder, featuring a 33-in. lift, hard-faced corners on the moldboard, adjustable position moldboard, track-mounted blade, mounted on a D4 Caterpillar tractor with hydraulic control.

Lauson Co., New Holstein, Wis.

They claimed the smallest water-cooled engine in existence showing equipment from ½ hp. to 5 hp. and air-cooled equipment from ½ hp. to 3 hp., some with clutches and gears. Air-cooled gasoline-driven generator sets were also shown.

LeRoi Co., Milwaukee, Wis.

The LeRoi portable two-stage compressor line included a new trailer model of 85 cu.ft. capacity; also a 160-ft. radial type compressor, both powered by a LeRoi gas engine. Another new LeRoi unit is the valve-in-head air-cooled power unit. Also included in the LeRoi display were several water-cooled gas engines and light plants of various sizes and capacities.

A. Leschen & Sons Rope Co., St. Louis, Mo.

Samples of Hercules Red Strand wire rope, in preformed and non-preformed styles, regular and flattened strand, metallic and hemp core.

R. G. LeTourneau, Inc., Peoria, Ill.

Every road show produces a spectacular hit, and this year it was the LeTourneau Model NU 45-yd. scraper hooked to a Tournapull two-wheel tractor unit powered by a Caterpillar 185-hp. diesel engine. Tractor and scraper are mounted on 30x40-in. Firestone tires. The scraper has a high arch frame, a goose-neck coupling to the tractor, is cable-operated and features a positive load ejector. The Tournapull tractor operates through six speeds from 1.8 to 25.7 mph. Tractor and scraper weigh 40 tons. The scraper has a 10-ft. cutting edge, is 21 ft. from apron to tailgate, and is 5½ ft. deep. Standing behind the unit was a Caterpillar diesel D8 Pushdozer, a rig equipped by LeTourneau for pushing these big scrapers while loading. A whopper of a scraper any place else except along side the Model NU was the Model N 33-yd. Carryall four wheel model with a goose neck front, open arch A-frame, cable control, featuring positive ejection, for the tailgate scrapes the entire bowl clean. It has a tubular top backbone, is mounted on 24x32-in. Firestone tires, and was hooked to a Caterpillar D8 tractor. Dwarfed by these two big scapers was the little Model S 4-yd. four-wheel cable-controlled scraper hooked to a Caterpillar R5 tractor; a big LeTourneau cable-operated bulldozer on a Caterpillar D8 tractor and a three-tooth LeTourneau Rooter, cable controlled.

Lima Locomotive Works, Lima, Ohio

One of the biggest units on the floor was the Lima Type 750 dragline with a 50-ft. boom, carrying a 2½-yd. Page bucket. The machine was Waukesha-Hesselman oil engine powered, and features vacuum assistors on the clutches, roller bearings throughout, and extra long crawlers. The Lima Paymaster ¾-yd. shovel was also on display, with a chain crowd, Buda gas power, wide welded boom, and single dipper stick.

Lincoln Engineering Co., St. Louis, Mo.

Air, electric and hand operated grease gun and other lubrication equipment was shown with fittings for heavy industrial equipment.

Link-Belt Speeder Corp., Chicago, Ill.

A new rig is the Link-Belt Model 360 1½-yd. shovel, Caterpillar diesel powered, featuring an all welded boom, single dipper stick, Speed-O-Matic control, removable and interchangeable crawlers to suit ground pressure, high ground clearance, and flush bottom frame. Link-Belt Speeder announces that they how have a complete line of shovels from ⅜ to 3½-yd. sizes. Another new rig was the LF60 ½-yd. Speeder shovel, featuring welded tubular boom, live boom hoist, double dipper stick, Waukesha gas engine power, and mounted on Speeder tractor crawlers.

Lister-Blackstone, Inc., Milwaukee, Wis.

This display included a 6 kva. "Powrpak" diesel-electric unit; a 40-hp. 1,200-rpm four-cylinder diesel engine; a 6-hp. 650-rpm one-cylinder diesel engine; and an 18-hp. 640-rpm one-cylinder horizontal diesel engine.

Littleford Bros., Cincinnati, Ohio

Littleford featured several new types of asphalt equipment, including the new Spraymaster distributor, 1,000-gal. capacity, mounted on a White truck, with an air-operated circular spray bar. Another new unit was a tank car heater and steam generator, a dual purpose steam generator, mounted on a two-wheel trailer; this unit generating steam at 200-lb. pressure in two minutes. Also new is the Bituminous Resurfacer, a drawn spreader, for handling by tractor or truck, mounted on runners, with adjustable depth of spread which mixes from 40 to 250 lb. per sq.yd. The Traf-O-Line marker is also new, a one-cylinder gas-engine powered hand-pushed unit for marking traffic stripes. Other equipment displayed included the trailer model asphalt kettle mounted on two wheels; the No. 101 Utility Trailer model spray tank on two wheels, gas engine power. Also shown was an 1,800-gal. fully automatic street flusher on a G.M.C. truck, with a Ford V8 engine driving the pump. The Littleford Road Broom, a suspension-driven three-wheel model with hydraulic lift, powered by Wis-

Hit of the Show was this 45-yd. Le Tourneau Scraper and 185-hp. Tournapull.

consin gas engine (broom only), designed for truck haul, was also shown. Littleford included in its display a two-wheeled 2-ton trailer roller, propelled by a Wisconsin gas engine, mounted on automotive type frame, and exerting 150 lb. per in. pressure on the roller; the wheels are arranged to lift when the machine is used as a roller and to carry all the load when moving from job to job.

Lufkin Rule Company, Saginaw, Mich.

Lufkin announced and displayed a new chrome steel tape for general engineering construction, claiming better wear and readability than previous tapes. In addition, all types of tape, rules, and precision tools were shown.

Mack-International Motor Truck Corp., Long Island City, N. Y.

Mack showed their Model FJ truck powered by a Mack-Lanova 130-hp. diesel equipped with a 7-cu.yd. Heil body. Their Model CH in a cab-over-engine style was shown with a 1,600-gal. Etynre distributor. For medium capacity Mack showed a 4-cu.yd. Gar Wood body and a Good Roads snow plow on the Model EH truck designed specially for maintenance work. Also shown were an opened-up diesel engine and a dual-reduction rear axle, and differential. The axle was claimed to be the largest in the industry with a 50,000-lb. static rating.

Macwhyte Co., Kenosha, Wis.

Literature and samples of wire rope were shown to illustrate the product of this manufacturer.

Maine Steel Inc., South Portland, Me.

Incorporated with the Cleveland Tractor exhibit was the Sargent line of equipment including a sidewalk snow plow on a Cletrac tractor, a 1-yd. Sargent overhead shovel on a model DE Cletrac and a Sargent cable-operated bulldozer.

Mall Tool Co., Chicago, Ill.

Vibrators for a full-width highway lane, gas and electric powered were shown, with respresentatives of the full line of flexible-shaft grinders, surfacers and other construction equipment. Portable electric drills and saws were shown, also the Mall pump.

Marion Metal Products Co., Marion, Ohio

A side-loading "Kompaka" refuse collector, with a compactor screw, operated from a power takeoff was shown on a cab-over-engine Chevrolet truck. Also in the Chevrolet exhibit was a 2-yd. dump body.

Marion Steam Shovel Co., Marion, Ohio

Marion had two shovels on display, the big improved Model 392, 2½-yd. Hesselman oil engine power, featuring vacuum swing and vacuum trip control. The other machine was the Model 33 shovel, 2¼-yd., Buda gas powered. Creating more interest than the shovels on display was the announcement of the new Marion Walker dragline, built on an entirely new principle of walking, available in 5 to 15-yd. capacities, diesel or electric power. Several of these machines have been in operation for some time and Marion now feels that the experimental period is over and they are ready to go into production at once.

Marmon-Herrington Co., Inc. Indianapolis, Ind.

In the Ford exhibit Marmon-Herrington showed the change from a standard rear-wheel drive Ford V95 truck to a M-H all-wheel drive unit simply made by installing a driving front axle and an auxiliary transmission. The change is claimed to double the effective power on soft road surfaces at a relatively low increase in cost.

Marvel Equipment Manufacturers, Chicago, Ill.

A new one-man portable concrete breaker capable of delivering 1,200 blows per minute by a 12-lb. piston actuated through a flexible drive shaft was shown. A melting kettle, fully insulated, with power spray and two burners was shown equipped for several uses. Marvel-Wico vibrators were shown in all sizes with electric and gasoline power.

Master Vibrator Co., Dayton, Ohio

Several sizes of gas and electric powered vibrators were shown with pumps, saws, buffers, etc. Gas electric generators up to 10 kw. and a new paving breaker operating on the flexible shaft principle were displayed.

Michigan Power Shovel Co., Benton Harbor, Mich.

The sleek little Michigan model C-16 shovel, ½-yd., Hercules gas powered, sports two tubular dipper sticks outside a tubular boom and is air controlled. Another neat looking rig was the ½-yd. Michigan TM C-16 truck crane, mounted on a Michigan 6-wheel truck, tandem drive, Hercules gas engine powered.

Minneapolis-Moline Power Implement Co., Minneapolis, Minn.

Featuring provisions for use of a[ny] type fuel, this exhibitor showed ignitio[n] engines varying in size from 19 to 1[4] hp. Some were equipped for natural ga[s] for oil field use, but all larger engine[s] were convertible to gas or fuel oil; [19]-39 and 47-hp. units were shown on rub[-]ber-tired tractors, one in a De Luxe cab type for highway maintenance.

Motor Improvements, Inc., Newark, N. J.

Several sizes of Purolator oil filters were shown with pictures showing the flow of dirty oil from engine to Purolator and of clean oil back to the motor.

Municipal Supply Co., South Bend, Ind.

A 1,000-gal. bituminous distributor was shown on a Studebaker cab-over-engine truck. A "Guttersnipe" pick-up street scraper with 5½-ft. swath and Continental power were shown. A traffic striper, hand powered, and a new development of a Cartwright hot spray bar were displayed.

Murphy Diesel Co., Milwaukee, Wis.

A 6-cylinder supercharged 200-hp. diesel was shown with Twin Disc clutch and a 6-cylinder 160-hp. engine directly connected to an Electric Machine Co. 85-kw. continuous operation generator. These machines feature fuel injector and pump combined in one unit making a complete fuel system for each cylinder. Specially insulated pistons permit continuous high power operation with normal lubricating oils.

—N—

Novo Engine Co., Lansing, Mich.

1½ to 7½-kw. generators, the latter with a diesel engine, all featuring a compact design, self-priming centrifugal pumps from 1½ in. to 8-in., a 4-in. diaphragm pump, a 25-gpm high pressure pump, and a light-weight two-drum hoist were shown, mostly with Novo power.

National Colortype Co., Inc., Bellevue, Ky.

Reflecting buttons, signs, signals, markers and other road traffic signal devices were shown.

National Motor Bearing Co., Inc., Oakland, Calif.

Metal encased, felt and leather, oil and grease seals were shown featuring the "Nationalized" leather which will not soften in oil or grease. Laminated metal shims were also displayed.

National Paving Brick Association, Washington, D. C.

Samples of paving brick as available in various parts of the country with literature and specifications regarding the proper use of brick in paving were shown.

National Traffic Guard Co., Atlanta, Ga.

Resiflex spring steel guard rail was shown with a working roadway model.

N. P. Nelson Iron Works, Inc., Passaic, N. J.

Representing the line of loaders and conveyors manufactured by this company was a bucket elevator truck loader on rubber tires, powered by a LeRoi engine.

Northwest Engineering Co., Chicago, Ill.

Looming up in the Northwest exhibit was the Model 80-D 2½-yd. shovel, Murphy 6-cylinder diesel power, with the neat Northwest welded box boom. In the other corner of the Northwest booth was a ¾-yd. pull shovel, Wisconsin gas powered, with a goose-neck welded box boom.

—O—

Ohio Oil Co., Robinson, Ill.

Samples of the various petroleum asphalts and literature on their use were displayed.

Osgood Co., Marion, Ohio

Osgood was proud of its new 1½-yd. Excavator shovel, powered by a Caterpillar diesel engine, featuring unit-cast steel construction, air-control operation, larger drums and clutches, and a welded box boom.

Oshkosh Four Wheel Drive Sales Agency, Oshkosh, Wis.

The Model W700 truck was shown with 128-hp. Hercules engine, ten-speed transmission, all wheel drive, special Oshkosh differential, and roomy, air conditioned cab. Shown on the truck were a Mullens 5-cu.yd. body and a Drott truck grader patrol with 12-ft. blade operated by hydraulic power from cab.

Owen Bucket Co., Cleveland, Ohio

The Owen display was unusually attractive, as all the buckets were painted white and trimmed with black. Included was the Type K 1-yd. material handling clamshell bucket; Type DX ¾-yd. extra-heavy round nose heavy-duty digging clamshell; Type RA four-tine rock grapple and orange-peel, a semi orange-peel bucket designed to handle rock and mixed stone, a full-blade orange-peel flame-cut to rock grapples at the points, with independent action on each tine; and the Type M ½-yd. special clamshell, narrow width, with square cutting edge, with teeth on both the bottom and sides for narrow trench work.

Ozalid Corp., New York, N. Y.

Five reproducing units were shown including dry development machines and white and blueprint outfits. The compact drying type machines are of special interest to construction jobs.

—P—

C. F. Pease Co., Chicago, Ill.

Two new continuous printers were displayed, turning out tables of various kinds for distribution.

Perfection Steel Body Co., Galion, Ohio

A streamlined coal delivery body on a Chevrolet truck and a hydraulic cylinder and pump with literature on the complete line of hoists, dump and other type bodies in sizes from 1½ to 15 tons, as manufactured by the company were displayed.

Pettibone Mulliken Co., Chicago, Ill.

A 1½-cu.yd. welded shovel bucket of manganese alloy was displayed with long-wearing teeth for hard digging. Other manganese parts for construction equipment subject to abrasion were shown.

Pioneer Engineering Works, Inc., Minneapolis, Minn.

Pioneer left most of their equipment at home; all that was on display was a 40x22-in. roll reduction crusher and a 3x6-ft. double-deck inclined vibrating screen. However, the booth was full of photographs and literature, especially that of the Vibrator Duplex crushing plant.

Pittsburgh Steel Co., Pittsburgh, Pa.

Guard rail and fittings were shown as representative of the company's line of highway accessories.

Portland Cement Association, Chicago, Ill.

Movies and literature were on display showing use of cement in various types of roads.

Prismo Safety Corp., Huntington, Pa.

Reflectorized signs, markers and line striping were shown featuring better visibility obtained by means of glass crystal spheres introduced in the paint surface.

—R—

Ransome Concrete Machinery Co., Dunellen, N. J.

Ransome had one of its big 34E Dual Drum pavers on display, Cummins diesel engine drive, 124-hp., two batch meters, a 32½-ft. spreading reach on a 36½-ft. boom, hydraulic control on boom swing and discharge and water valves, a single pivot skip, and a power raising boom. Other Ransome mixers on display included a 3½-yd. truck mixer on a cab-over-engine International truck; 3½S, 7S and 10S non-tilting mixers on pneumatic tires, and a 9-ft. bituminous mixer on two wheels equipped with a Hauck heater.

W. A. Riddell Corp., Bucyrus, Ohio

A Model 101 heavy-duty Road Patrol on six rubber-tired wheels, with a full swinging 12-ft. blade and Oliver engine was shown. A 6 to 8-ton roller with auxiliary rear wheels making a rubber tired unit for transport was displayed, powered by a V-85 Ford engine.

Rockford Drilling Machine Div. Borg-Warner Corp., Rockford, Ill.

Clutch and power takeoff units were shown disassembled to demonstrate their operation.

Rodgers Hydraulic, Inc., Minneapolis, Minn.

Rodgers has developed something of interest to all heavy equipment users, a line of hydraulic shop and portable presses that can be taken right to the job for work on a rig without dismantling the rig completely. Trailer presses are available for field service, such as changing pins and bushings on crawlers.

Rogers Iron Works Co., Joplin, Mo.

Mobile crusher units, 10x18-in., mounted on pneumatic tires and powered by Caterpillar diesels were displayed with two 9x16-in. jaw crushers representative of this company's line of pit and quarry equipment.

Rome Grader & Machinery Corp., Rome, N. Y.

The Rome Company has been revived and has come out with an improved line of Rome motor graders, blade graders, and auto mowers. None of these was on display at the show, but full descriptions were available. A very popular product is the Rome Pushover snow plow for fastening to the front bumpers of passenger cars or light trucks for plowing out driveways and filling stations. The Union Fork & Hoe Co., Columbus, Ohio, had a display of Razor Back hand shovels and spades in the Rome booth.

Root Spring Scraper Co., Kalamazoo, Mich.

A single-wing hydraulic lift snow plow and hydraulic operated 10-ft. variable position maintainer blade were shown on a Chevrolet truck.

Rosco Mfg. Co., Minneapolis, Minn.

Representative of the company's line of bituminous construction and maintenance equipment, a large bituminous distributor was shown on an International cab-over-engine truck.

—S—

St. Paul Hydraulic Hoist Co., Minneapolis, Minn.

A cutaway hoist showed the working parts of the truck dumping unit. Four models of steel dump bodies in various sizes were on display.

S&W Hydraulic Tool Co., Memphis, Tenn.

Shown as power for a paving breaker type tool was a small electric motor producing power through hydraulic impact in a single hydraulic column with no valves or return line. The manufacturers are reluctant to discuss the design but claim as much as a 6-in. piston stroke for operation of this one-man light equipment tool.

Sauerman Bros, Inc., Chicago, Ill.

Slackline cableways are too big even for the International Ampitheatre, so Sauerman had to be content with showing models and photographs of their equipment. There was a model of the new Tower Excavator, equipped with a Crescent 4-yd. scraper bucket, and carrying on the headtower a special Sauerman two-drum hoist, available in 170-hp. gas or 150-hp. electric power. The headtower is mounted on car wheels, the tailtower on crawlers. A steel ramp on the headtower permits loading into a hopper for car or truck haul. Also shown were electric motor-driven slackline cableway hoists, featuring hydraulic clutches and brakes and ball-bearing drums. The small Crescent buckets are now built with cast-steel arch bails. A full line of Durolite wire rope blocks were on display, including the new 8-in. wide throat ball-bearing block.

Schramm, Inc., Westchester, Pa.

Schramm showed a 60-cu.ft. compressor, trailer mounted, using a Ford-Mercury engine with four cylinders for power and the other four cylinders for compression of the air. They also displayed a 105-cu.ft. four-wheel mounted outfit with a Buda diesel, and 105-cu.ft. semi-trailer mounted diesel outfit with tool box, hose reel, and accessory gadgets with power by a Buda gas engine. A 210-cu.ft. compressor on four rubber tires powered by a Buda, and a 315-cu.ft. portable with International diesel power completed the exhibit.

Seaman Motors, Milwaukee, Wis.

A 6-ft. wide road-mix machine mounted on two wheels for tractor operation for pulverizing and mix-in-place on the road was shown.

Servicised Products Corp., Chicago, Ill.

Featured in the exhibit was a water seal device for premolded fiber joints inserted in an expansion joint. Also shown were bituminous, fiber, sponge rubber, and cork-rubber expansion joint materials.

Signal Service Corp., Elizabeth, N. J.

Road signs, reflectors, and reflector glass were shown for signal devices on highways.

Simplicity System Co., Chattanooga, Tenn.

Featured in the exhibit was a one-eighth scale model of a fully automatic 100-tons per hour asphalt plant, electrically operated and lighted to permit observation of all parts and the path of the aggregate. Also shown were Simplicity apron-type feeder and a 5,000-lb. twin pugmill mixer. A Falk speed reducer and Kron dial scale as used on installations were displayed.

Sinclair Refining Co., New York, N. Y.

Samples of lubricating oils and charts showing their use were displayed.

Sisalkraft Co., Chicago, Ill.

Literature and small model sections showed the covers and waterproof paper products of this exhibitor.

SKF Industries, Philadelphia, Pa.

Ball and spherical roller bearings, pillow block housings and transmission appliances were shown for heavy equipment.

Smith Engineering Works, Milwaukee, Wis.

A new 18-in. intercone crusher was shown, and a pulsator unit for vibrating screens. Model crushing and screening plants were shown featuring primary jaw crushers and Gyrasphere crushers.

T. L. Smith Co., Milwaukee, Wis.

Starting from a 3½S tilter, a 10S Trailsmith mounted on semi-trailers and a 14S non-filter on trailer body, the Smith Co. showed a series of mixers. Featured was a 1½-cu.yd. Smith-Mobile, Waukesha powered, mounted on an International truck and a 3-cu. yd. Smith-Mobile, Hercules powered, mounted on a Mack truck. A 1/6th actual size working model of the Smith-Mobile demonstrated its mixing ability.

Solvay Sales Corp., New York, N. Y.

Literature and samples of calcium chloride were on display.

Spicer Mfg. Corp., Toledo, Ohio

Three transmissions of varying size, a sectional clutch, power takeoff, universal joints, and drive shafts made up this interesting exhibit.

Standard Oil Co. of California

RPM diesel oil exhibit featured pistons and other working parts from real construction with charts showing proper use of lubricating oil for diesel engines.

Standard Oil Co. of Indiana

Petroleum asphalt and literature concerning application of petroleum products to highways and to equipment were on display.

Sterling Machinery Corp., Kansas City, Mo.

Sterling showed a two-drum welded steel frame hoist with Waukesha power, an electric drill press, and gasoline powered saw table. Pumps shown were 1½-in. to 4-in. 40M centrifugals, mostly with Wisconsin air-cooled en-

gines. Small motor generator sets were offered for lighting and small equipment operation.

Stewart-Warner Corp., Alemite Div., Chicago, Ill.

Featured in the exhibit was the Alemite portable service station mounted on an International truck with a Curtis air compressor, two types of grease and motor oil, and equipped with hose on reel dispenser for power lubrication of equipment in the field. All types of hand and pneumatic grease guns were shown with Alemite lubricants.

Stover Mfg. & Engine Co., Freeport, Ill.

A 5-hp. Lanova diesel engine was featured as the smallest diesel at the show; ¾ to 5-hp. air-cooled engines, a 2½-hp. hopper-cooled and 5 to 10-hp. water-cooled engines completed the display.

Sullivan Machinery Co., Michigan City, Ind.

Newest in the Sullivan line of compressors is the type WN-102 V-belt driven semi-portable two-stage compressor, 550 ft., V type, driven by a 160-hp. Caterpillar diesel engine. Sullivan also proudly displayed its little model 85 "Zeph-Air" portable compressor on two-wheeled mounting, rated at 85 cu.ft., Buda gas powered, fully streamlined and featuring tin-plated pistons and rifle-drilled connecting rods, precision made insert bearings, dynamically balanced as well as statically balanced. Another Sullivan compressor was the Model 105 portable two-stage V-type, 105-cu.ft., on a three-wheeled trailer, also boasting tin-plated pistons. Sullivan sticks to the wing-type detachable rock drill bit, and has developed a fully automatic electric grinder for sharpening them. The Sullivan improved Model HL2 Tunnel Mucker was on display, featuring 4-cylinder air motor power, variable speeds on all operations, overhead discharge, and automatic power centering and power swing. The machine is adaptable to any gage of track from 18 to 30 in. Other Sullivan equipment included the DW161 featherweight wagon drill rig, Blue Point buster tools and a full line of drills, spaders, bits, drill rods, gas and air hoists, both turbine and piston operated.

—T—

Thew Shovel Co., Lorain, Ohio

Thew has gone to chain-drive crawlers on its larger units, replacing the long-famous center drive. A brand new shovel on display was the Lorain Model 69, 1¼-cu.yd., featuring chain drive, closed system vacuum and air control with vacuum control on the swing and crowd, which operates as a booster, all-welded boom and dipper sticks, and powered by Caterpillar diesel engine. The older Model 80 Lorain 1¾-yd. shovel was on display, equipped with chain-drive crawlers and Hesselman oil engine power. The third shovel on display was the Lorain Model 40A, ¾-yd., in which an independent chain crowd has replaced the former automatic rope crowd. This model features a tubular single dipper stick and is powered by a Caterpillar diesel engine. Creating just as much attention as the shovels was a small model of the new Lorain 10-ton Moto-Crane, which served as an announcement of this entirely new rig. The crane, powered by the new General Motors diesel engine, is mounted on a special carrier truck, designed and built by Thew, powered by a Waukesha engine, featuring a deep frame construction with 175-in. wheelbase. The cab is set to one side, and the boom of the crane drops down alongside the cab, providing an unusually low clearance height.

Towering frames and booms greeted visitors at the main entrance to the Amphitheatre.

Thornton Tandem Co., Detroit, Mich.

A cutaway exhibit showing the automatic locking differential of the Thornton four-wheel drive was displayed for demonstration of the principle. Several pieces of equipment in the Chevrolet and Ford exhibit were carried on Thornton Tandem four-wheel drives.

Timken Roller Bearing Co., Canton, Ohio

The full line of Timken tapered roller bearings for construction equipment was displayed along with removable rock bits for various types of drilling on construction projects.

Toncan Culvert Mfg. Ass'n., Cleveland, Ohio

Displayed were a Tyton Flood Gate, "Tripleclad" and uncoated corrugated pipe and small pieces of sectional plate.

Topeka Highway Mower Co., Topeka, Kan.

A 5-ft. sickle bar was shown on a truck mounting. Front end power take off and Twin Disc clutch transmit power from Ford V8 engine to truck and sickle.

Toro Manufacturing Company, Minneapolis, Minn.

Various types of mowing machines were shown; a Highway Tractor with 5-ft. sickle bar and hydro control to 90 deg. up or 80 deg. down; a Municipal Tractor, Hercules powered, with 3 or 5 gang 30-in. mowers; and small powered mowing outfits.

Trackson Co., Milwaukee, Wis.

Trackson showed its Model T-4 Traxcavator, a ¾-yd. tractor front shovel mounted on a Caterpillar D4 diesel tractor. It is cable controlled, and has a dumping height of 8 ft. 8 in. On the rear of the tractor was a Hyster winch.

Transmission & Gear Co., Detroit, Mich.

Multiple-reduction transmissions for such machines as finishers, requiring several different speeds and powers, were featured with the more common transmissions and a split-type power take-off.

Truscon Steel Company, Youngstown, Ohio

Reinforcing and accessories, steel road forms, guard rail, and tunnel liner plates were displayed.

Tuthill Spring Co., Chicago, Ill.

A new product, adjustable reflector button supports for use as curve markers, was displayed with spring-type guard rail, "Lucite" reflector buttons and industrial springs.

Twin Disc Clutch Co., Racine, Wis.

Glass-enclosed and cutaway sections of clutches, power takeoffs, and reduction gears, were shown with pictorial representation of the action of a clutch.

Tyson Roller Bearing Corporation, Massillon, Ohio

Ball and tapered roller bearings for all highway equipment were shown.

—U—

Union Metal Mfg. Co., Canton, Ohio

Ornamental light poles and full length Monotube piles including a welded section were displayed. Two types of corrugated sheet piling with driving head and grip type puller were shown.

Union Steel Products Co., Albion, Mich.

A "Qwik-lock" joint and dowel assembly unit for central plant assembly joint material was shown with paving accessories.

Union Wire Rope Co., Kansas City, Mo.

Samples of wire rope and literature were shown.

U. S. Steel Corp. Subsidiaries, Pittsburgh, Pa.

Atlas white cement markers, guard rail, open flooring, I-Beam-Lok, reinforcing, sheet and bearing piling, sectional culvert plate, reflector signs and other accessories were displayed on a "road" by U. S. Steel affiliates.

Universal Crusher Co., Cedar Rapids, Iowa

The Universal roller-bearing jaw crusher and the double-roll crusher were on display in this exhibit.

Universal Power Shovel Corp., Milwaukee, Wis.

Universal showed its neat little Model 4-12 excavator, ⅜-cu.yd., featuring a welded boom, double inside dipper sticks, single chain crowd, welded bed frame, hooked rollers and powered by a Waukesha-Hesselman oil engine.

—V—

Vickers, Inc., Detroit, Mich.

Power hydraulic controls for operation of heavy construction equipment were displayed and explained.

Vulcan Iron Works, Inc., Chicago, Ill.

Vulcan showed a single-acting pile hammer and their new open-type differential-acting hammer having the same characteristics as the single-acting, but striking twice as many blows per minute. A closed-type hammer suitable for subaqueous driving, a pile extractor, and several driving helmets completed the exhibit.

—W—

Earl Walker Co., Inc., Sullivan, I

A No Drip bar for use on any bit minous distributor and a special N Drip full circulating bar were show with information on road oiling equi ment manufactured by the company.

Walker Turner Co., Inc., Plainfield, N. J.

Showing power tools more adaptabl than ever to construction work of al kinds, Walker-Turner featured a new radial type saw, capable of quick change to any angle of rip or cross cutting, mounted on a rubber-tired semi-trailer.

Walter Motor Truck Co., Long Island City, N. Y.

Shown at the show were: a Snow Fighter, 150-hp. diesel, four-point drive, equipped with dump body, front V plow and right wing blade with full hydraulic control; a maintenance truck, 100-hp. diesel, low-mount dump body and road scraper blade with hydraulic control. Attracting most attention, however, was the new Walter four-wheel four-point drive high-speed tractor hauling a Heil 16-yd. Dig-N-Carry hydraulic trailer scraper, a fast dirt-moving unit.

Waukesha Motor Co., Waukesha, Wis.

Featured item of this exhibit—"Multi-Fuel Oil Engines," 50 to 225-hp. engines are now made so a simple change in the fuel burning accessories converts from an oil engine to gasoline, gas, or other fuel with no change in the compression ratio. An 11-hp. 2-cylinder opposed power unit was shown for the first time.

S. K. Wellman Co., Cleveland, Ohio

"Velvetouch," a bimetallic friction material which assists in dissipating heat was shown with clutch plate assemblies.

Wellman Engineering Co., Cleveland, Ohio

Wellman showed its familiar line of Williams buckets, including the ¾-yd. general purpose clamshell with power arms; a ¾-yd. general purpose dragline bucket; and a ¾-yd. multiple rope general purpose clamshell bucket. They announced a new line of all-welded buckets, except all replaceable parts will be riveted, featuring the same type of construction as the heavy dredge buckets.

Wheeling Corrugating Co., Wheeling, W. Va.

Literature was shown on the corrugated pipe and highway accessories of the company.

White Mfg. Co., Elkhart, Ind.

Gas and electric powered flexible shaft vibrators were shown with a model of a double-lip gate-bottom single-line concrete dump bucket.

White Motor Co., Cleveland, Ohio

A No. 950 White truck was shown with the newly developed 40,000-lb. gross Timken axle and a 116-hp. motor. Also on display was a 148-in. wheelbase truck with two speed double reduction axle, 26,000 lb. gross load. Proof of long service was featured in a White engine used for 241,000 miles in a truck and opened up to show wearing parts in good condition.

Whitney Chain & Mfg. Co., Hartford, Conn.

Roller silent type chain, conveyor chain, flexible connectors, and chain vise were shown to represent the general line.

Wico Electric Co., Springfield, Mass.

A new "Electromag," for use in same way as distributor head, producing a spark of constant intensity, was shown with magnetos of conventional type.

Willamette-Hyster Co., Portland, Ore.

Hyster winches were shown on several tractors, including the D8 towing winch on a D8 Caterpillar tractor hooked to a LeTourneau ripper, a D4 winch on a D4 Caterpillar Trackson High Shovel and a D2 winch on a D2 Caterpillar hooked to a LaPlant-Choate bulldozer.

Willett Mfg. Co., Grand Rapids, Mich.

A reversing, tilting, and rotating 12-ft. blade for attachment to truck was shown.

Williams Form Engineering Co., Grand Rapids, Mich.

Form clamps for use on straight or batter walls, high tensile rods, stud locks for nailless plywood forms and other accessories were shown.

Wisconsin Motor Corporation, Milwaukee, Wis.

Single-cylinder air-cooled engines were shown in sizes from 1 to 8-hp. and 4-cylinder air-cooled up to 35 hp. A 66-hp. water-cooled 6-cylinder represented the heavier type engines.

Symbolic of the fact that construction now moves on rubber.

Gar Wood Industries, Inc., Detroit, Mich.

Gar Wood has added the Continental line of scrapers to its own, thus giving a complete range of sizes. Brand new this year is the Gar Wood 20-yd. cable-controlled scraper, mounted on six wheels, four in the rear, shown hooked to an Allis-Chalmers HD14 108-hp. diesel tractor, and lined up to be pushed by another similar tractor equipped with a special pusher bar. That Gar Wood has no preference as to cable or hydraulic control for big scrapers is indicated by also displaying the Model T20 hydraulic-control scraper, 20-yd. capacity, six-wheel mounted, featuring the Auto-spring lift, capable of lifting a loaded scraper clear of the ground and taking a lot of the strain off the hydraulic mechanism. The Auto-spring lift is standard on all Gar Wood hydraulic scrapers. The Model T20 was hooked to an A-C HD14 diesel tractor, and was pushed by another HD14 diesel equipped with a Gar Wood hydraulic bulldozer with a special pusher plate.

Next in size was the Model L12 Gar Wood 12-yd. hydraulic scraper, six-wheel mounted, four to the rear, hooked to an Allis-Chalmers Model L 91-hp. gas tractor. The Gar Wood Model L10 hydraulic scraper, 10-yd. capacity, six-wheel mounted, was alone, but the 8-yd. hydraulic scraper was hooked to an A-C WS 70-hp. gas tractor carrying a Gar Wood hydraulic bulldozer. Three Gar Wood-Continental hydraulic scrapers were on display, all two-wheel rear-dump types. The 7-yd. scraper was attached to an A-C WS 70-hp. gas tractor carrying a Gar Wood hydraulic trailbuilder; the Model 26 scraper, 6-yd. capacity was hooked to an A-C HD7 diesel tractor; and the small Model 23 3-yd. scraper was lined up with an A-C WM 37-hp. gas tractor carrying a Gar Wood hydraulic trailbuilder. All Gar Wood hydraulic equipment is controlled by a triple-valve control unit.

Other Gar Wood equipment on display included the Model 80 road ripper, a heavy-duty three-tooth unit, hydraulic operated, hooked to an Allis-Chalmers HD14 108-hp. diesel tractor, which also carried a Gar Wood hydraulic trailbuilder; Gar Wood hydraulic hoist dump truck bodies in various sizes; a two-drum winch for rigging; and the Gar Wood Load Packer, a low-loading garbage collector mounted on a Chevrolet truck, and featuring mechanical conveying and packing of the material within the body.

Wood Preserving Corp., Pittsburgh, Pa.

Treated-timber guard rail and sign posts were shown with literature on the subject of preserving and the use of wood.

Wooldridge Mfg. Co., Sunnyvale, Calif.

From California came the Wooldridge Terra Clipper, a 28-yd. scraper, mounted on six wheels, cable controlled through a three-drum hoist that gives separate and independent control on the front apron, back apron, and the hoist. Wooldridge also showed a big road ripper, cable controlled, weighing 14,000 lb., of all welded construction.

Worthington Mower Co., Stroudsburg, Pa.

Grass maintenance equipment was shown in a Chrysler-powered Worthington rubber-tired tractor designed to carry a 5-ft. sickle bar or up to seven 30-in. rotary cutters.

Worthington Pump & Machinery Corp., Harrison, N. J.

A new wagon drill was shown with spur gear and pinion for quick leveling and a pneumatic feed. 105 and 210-cu.ft. portable compressors with Hercules engines, the larger a diesel, were displayed with rock hammers, sheathing drivers and breakers.

CUTTING

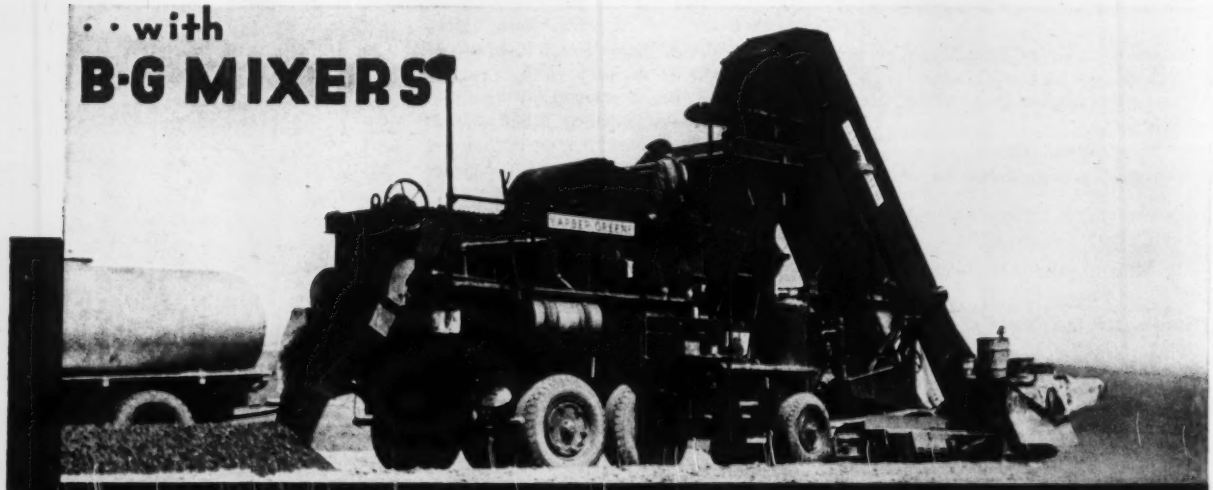
. . with B-G FINISHERS

THE B-G Finisher cuts costs while raising mat quality. It requires less labor. Its automatic leveling and simultaneous tamping greatly reduce if not entirely eliminate the patching crew. It reduces rolling. Its 5 ton, receiving hopper allows trucks to leave immediately—cutting truck time and costs. Full crawler traction eliminates delays in pushing large trucks, in working upgrade, in traveling over soft ground. Tamping simplifies the matching of adjacent strips. Investigate.

Complete, thoroughly illustrated literature is available on both the Barber-Greene Mixer and Finisher. Phone, write, or wire for your copy. There is no obligation. Barber-Greene Company, 422 West Park Ave., Aurora, Ill.

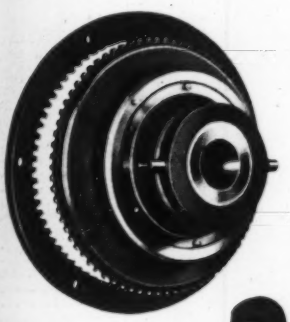
THE B-G Mixer cuts costs primarily through its continuous operation. It handles a relatively small amount of material at any given moment—which permits a machine of comparatively small size and weight for its high hourly capacity. Its high portability, its ability to work in central or travel plant set-ups, and its superiority in both bituminous and stabilized mixing give a valuable cost saving versatility.

. . with B-G MIXERS



STANDARDIZED MATERIAL HANDLING MACHINES

BARBER-



Twin Disc Model E Clutch

Lazy?... NOT THIS CLUTCH

There's no room in your power shovel for lazy, lagging clutches that loaf on the job. That's why leading shovel manufacturers are furnishing Twin Disc Clutches as standard equipment. Twin Disc swing and travel and crowd retract clutches work *all* the time . . . cut valuable seconds from the work cycle, seconds that spell extra loads, larger profits.

Twin Disc Clutches engage easily and smoothly . . . pick up the load without grabbing . . . hold firmly without slippage when engaged. They're husky and rugged . . . designed to stand up under hard pounding day after day. Single point adjustment, use of the finest, heat-treated metal parts, removable friction discs . . . these are three features that give Twin Disc Clutches longer life and simplify service. Complete information will be supplied upon request.

TWIN DISC CLUTCHES

REG. U. S. PAT. OFF.

● **California:** Los Angeles, Charles W. Carter Co.; San Francisco, Charles W. Carter Co. **Colorado:** Denver, Liberty Trucks and Parts Co. **Illinois:** Chicago, Motive Parts Co. of America; Chicago, Western Contractors Supply; Chicago, Wisconsin Industrial Parts. **Massachusetts:** Boston, Rapp-Huckins Co., Inc. **Kansas:** Great Bend, Scheufler Supply Co. **Maine:** Portland, Southworth Machinery Co. **Michigan:** Detroit, Whitney Bros. **Minnesota:** St. Paul, Truck Parts, Inc. **Missouri:** St. Louis, Auto Parts Co. **New York:** Buffalo, Edward W. Rode; New York City, Twin Disc Clutch Parts and Service of New York, Inc. **Ohio:** Cincinnati, C. McCash; Cleveland, Industrial Engine Parts. **Oklahoma:** Tulsa, Twin Disc Clutch Co. **Oregon:** Portland, Berg Evans Chain Company. **Pennsylvania:** Pittsburgh, Contractors Equipment Service Company; Philadelphia, Maerky Machine Works. **Tennessee:** Knoxville, Auto Equipment & Supply Company. **Texas:** Dallas, Twin Disc Clutch Company; Fort Worth, John Muller Company; Houston, Portable Rig Company, Inc.; Houston, John Muller Company. **Utah:** Salt Lake City, Lund Machinery Company. **Virginia:** Richmond, Standard Parts Corporation. **Washington:** Seattle, Berg Evans Chain Company.

TWIN DISC CLUTCH COMPANY • 1327 RACINE STREET • RACINE, WISCONSIN

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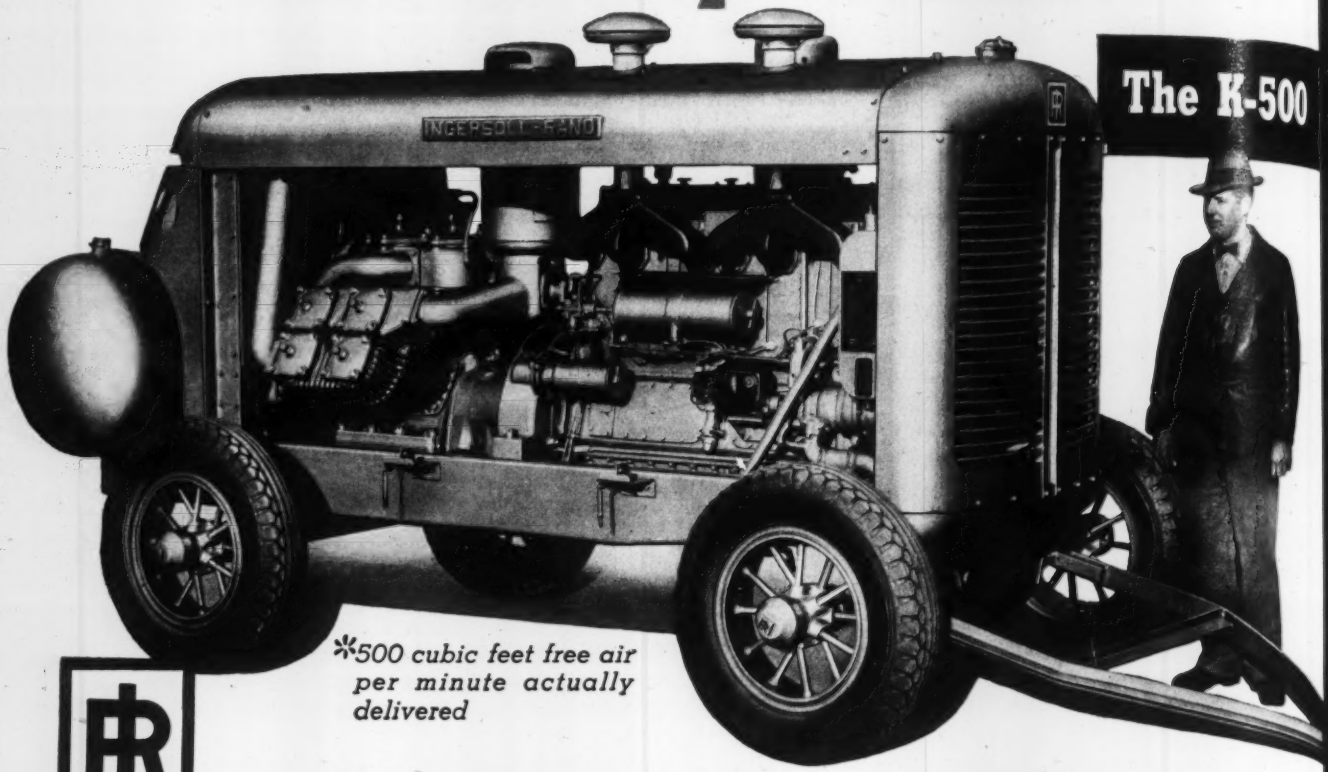

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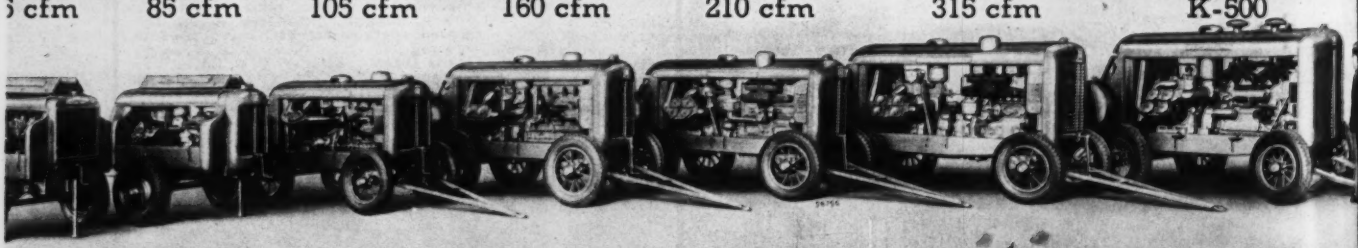


INDUSTRY ORGANIZES *For National Defense*

ALERT to what is happening in Europe, the American people are setting out to strengthen their defenses against aggression from any quarter. Already the government has laid down an initial program to that end.

The surest defense against aggression is the ability to resist it. If we are known to be well prepared we may avert attack. If we cannot avert it we shall be armed against it. But preparedness against war means preparedness to wage war.

And modern war is an industry. Like every other industry, it is a matter of men, materials and machines. Fighting men must be skilled workers, trained to use an arsenal of special tools and equipment that are just as diversified and just as essential to success as those of any other industry.

The plant, supplies and personnel of war must rival in efficiency those of any peacetime industry. For the stakes of success or failure in war are not paid in money profits or losses: they are paid in the lives and property of the people, in the security — perhaps the survival — of a nation.

* * *

Sound national defense calls first for a comprehensive program, carefully planned to back up a clear-cut policy as to what we expect to defend. Next comes the appropriation of funds to realize that program. These first steps are vital: they are up to government.

Then program and appropriations must be translated into performance. Native raw materials must be produced, processed and stored. Our meager supplies of strategic materials of foreign origin must be built up until we have accumulated ample stockpiles against the use and wastage of active war. And most urgent, because it is most complicated, raw materials must be manufactured into the innumerable items required to equip the modern army.

We of McGraw-Hill, living with American industry as we do, are keenly aware of the effort that will be required to produce the materials and equipment now needed to modernize our national armament.

Tanks and anti-tank guns, airplanes and anti-aircraft guns, machine guns and automatic rifles, trucks and tractors, destroyers and supply ships — these are but a few items from the endless inventory of military and naval equipment that we must produce by scores, hundreds and thousands, even to arm an Initial Protective Force, behind which we might rally our national resources for decisive effort.

Obviously the army and navy must count on American industry for an ample and continuous supply of this equipment, and industry must organize to produce it in vast quantities. This means the construction and adaptation of manufacturing, transportation and storage facilities, the organization of competent executive and technical staffs, the training of skilled craftsmen in numbers adequate to maintain exacting production schedules. All this, in itself, is an industrial organization problem of the first magnitude, but upon it is imposed still another and vital specification — *sustained speed*.

For time is the all-essential ingredient of modern war. It cannot be bought with any appropriation, however great; once lost, it cannot be recaptured; we must make effective use of it while we still have it. And at this juncture we have none to waste in fumbling, jockeying or experiment.

* * *

Two courses are open to carry out such a program.

1. We might adopt the totalitarian plan of nationalizing industry, conscripting the wealth and labor of all, and suppressing the normal incentives and management of industry in favor of the authority and control of government officials.

2. Or we can stick to the American way of achieving national unity and efficiency by intelligent cooperation between industry, labor and government.

There are those to whom the first will appeal as being the more direct. But I am convinced that most Americans will insist that the job be done in the American way. And in this preference the President, speaking for government, already has indicated his concurrence.

But effective cooperation in so complex and unfamiliar a task demands the utmost of mutual understanding and confidence from all concerned. Confusion of purpose and conflict of opinion are bound to arise — have, indeed, already arisen. Needs and capacities in many fields must be reconciled, relative priorities for various products must be determined, specific parts of the whole program must be allocated, supervised and coordinated with other parts. Government officials, smarting under the whip of urgency, must render quick decisions on highly technical matters, while industrial executives, masters of their own operating technique, must adapt themselves to arbitrary and unfamiliar requirements.

Under such conditions, many problems will arise that must be worked out between the men of industry and those of government. Some of them will be the more acute because of the restrictions under which industry has had to work during recent years—restrictions that have curbed not only the expansion of plant capacity, but also the development of improved processes and the supply of skilled workers. Now, from this sag in our industrial growth, many departments of industry must undertake an overnight expansion of capacity to meet the exacting time schedules of national defense. So industry must look to government for the cooperation that will enable it to expand its facilities promptly and yet write off in reasonable time its heavy emergency investments.

* * *

If we are to deal wisely with these situations, and many more we cannot now foresee, everyone engaged in any part of the defense effort must be willing and able at all times to get a fair understanding of the problems of the others. To help maintain such an understanding McGraw-Hill is peculiarly fitted.

1. By the organized exchange of views and information among our 24 papers, we can help to coordinate the thinking and practice of the 1,000,000 executives, technicians and operating men who are their readers, in matters that have to do with their part in the defense project.

2. Through constant contact with government agencies and the men of industry, our papers can interpret to industry the needs and policies of government and to government the problems and requirements of industry.

3. For the men of industry, each of our papers will expand its regular service as a clearing house of technical and operating data, with special reference to the needs of plants that are producing defense materials and equipment.

To forward these objectives we have set up within our company a National Defense Editorial Board. It is composed of the chief editors of our publications that serve the functions and industries that are of key importance to the defense effort. Made up of men intimately familiar with the personnel and practice of their industries, this board will stimulate and supervise the activities of McGraw-Hill papers insofar as they can contribute to the defense effort. It will outline basic editorial themes, directed to the forwarding of that project, to be adapted by each paper to the special needs of its specific field.

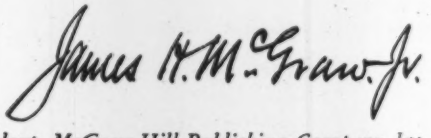
The board will keep close touch with industrial executives and technicians so as to keep abreast of new problems as they arise. It will maintain contact also with government defense agencies and keep our editors posted as to government objectives, plans and problems. Thus it will function as a link between the several governmental defense agencies and the McGraw-Hill editorial organization, and so help each editorial staff to develop a program best suited to the special problems of its industry.

* * *

In thus undertaking our part in an extraordinary industrial effort, we shall not neglect the normal concerns of American industry. So far as may be consistent with the paramount needs of national defense, production and distribution of the goods and services normally consumed by the American people must go on. The effort to mobilize industry for the national defense must be, in large measure, an additional job and an added burden.

That burden is within the capacity of the American people. But it will not be light. And if industry is to carry successfully its heavy share of that burden, it needs the full cooperation of every industrial function.

For more than seventy-five years, through peace and war, McGraw-Hill publications have served to interpret between the various departments of industry and between industry and the American people. Today, as we face these new problems, there is a new and urgent need for interpretation between the industries we serve and the government to which we all bear allegiance. It is fitting that McGraw-Hill should undertake this effort. To it I pledge every resource of our organization.



President, McGraw-Hill Publishing Company, Inc.

This message is appearing in all McGraw-Hill industrial and business publications, reaching over a million readers.

CONSTRUCTION REPORTS

Compiled by BUSINESS NEWS DEPARTMENT
Engineering News-Record, 330 W. 42nd St., New York
ELSIE EAVES, MANAGER
SCOTT McLEOD, STATISTICIAN
(Daily service also available—Write for details)

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

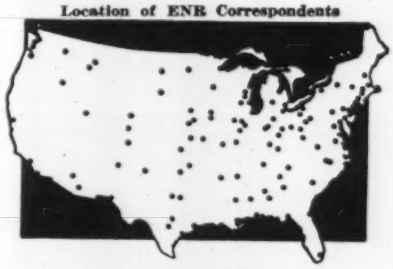
Classes of Construction
(Named in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges, Grade Cross'gs
Streets & Roads
Earthwork, Waterways
Unclassified
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings

Stages Reported

PROPOSED: (except Streets & Roads): BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR); LOW BIDDERS: All low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published. CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Location of ENR Correspondents



Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD Engineering News-Record Construction Daily

Dates shown are of issue in which last previous report was published.

WATER SUPPLY

PROPOSED WORK

Ark., Walnut Ridge—E. K. Riddick, mayor, imprv., exten. WW sys. $30,000. M. L. Crist, Little Rock, engr.

Conn., Watertown—Oakville Fire Dist., Watertown, WW sys., storage and distr. facilities at Oakville. $300,000 Buck & Buck, 650 Main St., Hartford, consult. engrs. Bronson E. Lockwood, Litchfield Rd., engr.

Fla., Jacksonville—C. Robinson, city supt., water sprinkling sys. at Hyde Park Country Club. $16,000.

Ill., Moline—A. H. Arp, mayor, watermains, sewer and storm drains in Wooded Hills area, etc. Approx. $25,000.

Ind., Columbus—Bd. P. Wks., F. C. Owens, chn., City Hall, surveys WW imprvs. Russell R. Moore & Co., 930 Ind. Pythian Bldg., Indianapolis, engrs.

★**N. J., Trenton**—Hamilton Twp. Com., 2090 Greenwood Ave., water plant, 3 wells, electrically driven plants, 2 elevated tanks, pipe lines, etc. $500,000. D. Riley, 2090 Greenwood Ave., twp. engr. Clyde Potts, 30 Church St., New York, engr.

N. Y., Niagara Falls—Laying c.i. watermain from Lewiston to Youngstown. $75,000.

N. C., Plymouth—B. G. Campbell, mayor, water and sewerage sys. extns., 22,000 ft. new lines, hydrants, etc. $53,000. Will file application for WPA funds.

O., Mansfield—C. M. Crafton, safety dir., exten. 16 in. Lexington Ave. line to mercantile dist., constructing high capacity line to link pump. unit with industrial mains. $65,000.

O., Seville—Bids in 30 days new water treatment plant. $20,000. P. W. Elwell, 5005 Euclid Ave., Cleveland, engr. CD 5/29—ENR 6/6.

Pa., Lock Haven—C. E. Herr, mayor, purchasing, installing chlorinator units at WW. Over $15,000.

Tex., Agua Dulce—J. Sablaturn, mayor, WW sys., distr. lines, deep well, pump. unit, etc. $40,000. M. C. St. John, 4101 Polk St., Houston, consult. and superv. engr.

Tex., Denison—C. Scott, mayor, bids first part of July WW imprv., Sect. 2, 4 m.g.c. filtration plant, at Randall Lake brick pump house, $145,000; plans Sect. 3, 11 mi. 16 in. pipe line carrier from Randall Lake to city limits, pipe lines inside city limits. $120,000. A. M. Brenneke, city engr. H. R. F. Heiland, c/o Aztec Bldg., San Antonio, consult. engr.

Tex., University Park (P. O. Dallas)—WW sys. imprvs. $150,000.

BIDS ASKED

Bids Asked About July 1

Kan., Topeka—Mission Twp. booster pumps, watermains, 75,000 gal. elevated tank. O. J. Eidman, Topeka, engr. CD 6/15—ENR 6/22.

Bids Asked July 10

★**Calif., Los Angeles**—Metropolitan Water Dist., 306 W. 3 St., 27.7 mi. pipe line (Orange Co. feeder), involving lock joint, reinf. precast concrete pipe, designated (P) and/or welded steel pipe, gunite exterior, mortar lining (SC) and/or welded steel pipe, gunite exterior, enamel lining (SE) divided into schedules:—SCH 34 P., 6.3 mi., SCH 34 SC, 6.3 mi.; SCH 34 SE, 6.3 mi.;. SCH 35P, 8.8 mi., SCH 35SC, 8.8 mi., SCH 35SE 8.8 mi., SCH 36 P, 3.8 mi., SCH 36 SC 3.8 mi., SCH 36SE, 3/8 mi., SCH 37 SC 8.8 mi., and SCH 37 SC 8.8 mi., SCH 37 SE 8.8 mi. various sizes pipe, Spec 335. Over $500,000. F. E. Weymouth, 306 W. 3 St., Los Angeles, engr..

Bids Asked July 15

O., Bucyrus—F. C. Judd, dir. Pub. Serv., furnishing 6,200 ft. 4- to 8-in. c.i. or asbestos cement pipe, etc.

Bids Asked July 18

†**Mass., Chicopee Falls**—Office Con. Q. M., Westover Field, Northeast Air Base, 500,000 gal. elevated steel water tank, Westover Field, Northeast Air Base; adv. ENR 6/27.

Bids Asked July 19

†**Fla., Tampa**—Office Con. Q.M., MacDill Field, Tampa, 500,000 gal. elevated steel tank, piping, accessories, at MacDill Field; adv. ENR 6/27.

Bids Asked

Mass., Lynnfield—Lynnfield Center Water Dist., 450,000 gal. steel standpipe for water storage. Whitman & Howard, 89 Broad St., Boston, engrs.

CONTRACTS AWARDED

Calif., Oakland—Southern Pacific R. R., W. H. Kirkbride, ch. engr., 65 Market St., San Francisco, drilling, casing wells, West Oakland Yards, to Simonds Mchy. Co., 816 Folsom St., San Francisco, **$15,500.**

Colo., Fort Collins — Watermains. **WPA. $51,385.** $25,000 bond issue approved.

Ind., Indianapolis—Indianapolis Water Co., H. S. Morse, mgr., Monument Circle, 1 story, bsmnt., 82x132 ft. and 3 story, 60x82 ft. filter plant and chemical building, to Service Constr. Co., 417 Castle Hall Bldg., **$202,000.** Est. $250,000. Bids 6/7, awarded 6/20. CD 5/31.

Ia., Council Bluffs—J. Boyne, city engr., imprv. reservoir, **WPA. $132,937.** CD 5/22—ENR 5/30.

Miss., Meridian—C. Vinson, mayor, complete pump. unit, centrifugal pump driven by gas-fired internal combustioin engine properly connected with speed increaser, etc., to A. M. Lockett & Co., Whitney Bldg., New Orleans, La., **$16,439.** Bids 4/30, awarded 5/22. CD 5/7—ENR 5/9.

N. J., Newark—W. Banks, engr., City Hall, aqueduct, cement lined concrete, steel tunnel and 48 in. steel pipe with two 50 ft. shafts under D. L. & W. R.R., to C. Salvatore & Co., 390 High St., Orange, **$46,318.** Bids 5/6. CD 5/13—ENR 5/16.

N. Y., Lakewood—E. Eckman, mayor, watermains, hydrants, etc., **WPA. $31,955.** H. Freed, supt. Water. CD 2/16—ENR 2/22.

Pa., Norristown—Norristown Water Co., W. Main St., reservoir, West Norristown, to J. A. Munroe & Sons, Pontiac St., Natick, Mass. Est. over **$50,000.** Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs.

Pa., Scranton — Scranton-Spring Brook Water Service Co., 127 Jefferson Ave., relocating watermains along Scranton-Carbondale Hy., own forces. **$35,000.**

Tenn., Tullahoma—D. R. Campbell, mayor, 150,000 gal. concrete reservoir, new 10 in. mains. Owner builds, force account. **$15,000.**

Tex., Bertram—Burnet Co. Water Control & Imprv. Dist. 1, c/o B. F. Warden, Jr., Bertram, WW sys. imprvs. **WPA. $54,136.** J. W. Beretta Engineers, Inc., c/o Natl. Bank Commerce Bldg., San Antonio, engrs.

Tex., Brownsville—WW imprvs., **WPA. $27,500.** J. O. Kelly, Brownsville, engr.

Tex., Gilmer—H. B. Davis, mayor, WW sys. imprvs. **WPA. $17,200.** Freese & Nichols, c/o City, engrs.

Tex., Luling—J. C. Stein, mayor, WW sys. imprvs., extens., day labor and purchase method. **$50,000.**

Utah, Francis—New water sys., flow line, reservoir, intake structure, distr. sys., **WPA. $64,651.** J. Clyde Van Tassell, Kansas, engr.

N. B., Partridge Island (St. John P. O.)—Dominion Government, Ottawa, Ont., 4 in. water pipe line, to St. John Tug Boat Co., Ltd., East St. John. **$19,675.** Dpt. P. Wks., Ottawa, Ont., engrs.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Ark., Stamps—D. C. Nichols, mayor, sewerage sys. $25,000. R. E. Williams, Pyramid Bldg., Little Rock, engr.

Calif., Los Angeles—Sanitary sewers, Sepulveda Blvd. and Brookhaven Sewer Dist. $49,630. L. Aldrich, City Hall, engr.

Fla., Starke—Sewers, drainage canal, etc. $29,000.

Idaho, Boise—Defeated $350,000 bonds, sewage disposal plant. Greeley & Hansen, 6 N. Michigan Ave., Chicago, Ill., engrs. CD 5/31—ENR 6/6.

Ia., Ames—State Bd. Educ., Des Moines, sewage plant and sewer lines at State College. $30,000.

Ia., Gladbrook—H. Lundt, city clk., bld in July, sewage disposal plant and intercepting sewer. $25,000—$30,000. R. B. Slippy Eng. Corp., 412 Lafayette St., Waterloo, engrs. CD 12/20—ENR 1/4.

Ky., Greendale—Dpt. Welfare, c/o Margaret M. Woll, comr., and R. C. Wyatt, engr. in charge, Frankfort, new sewage disposal plant for Kentucky Houses of Reform. Approx. $50,000. H. K. Bell, McClelland Bldg., Lexington, engr.

Ky., Hopkinsville—Dpt. Welfare, c/o Margaret M. Woll, comr., and R. C. Wyatt, engr. in charge, Frankfort, new sewage disposal plant for Western State Hospital. Approx. $50,000. H. K. Bell, McClelland Bldg., Lexington, engr.

Mich., Battle Creek — Battle Creek Twp., Battle Creek, sanitary sewerage sys. $193,000. H. P. Jones & Co., Sec. Natl. Bank Bldg., Toledo, O., engrs.

N. J., Hackensack—Bergen Co., Administration Bldg., constructing or reconstructing culverts and storm water drains. $43,560. R. P. McClave, Administration Bldg., engr.

N. Y., Medina — Surveys sewage disposal plant. Over $25,000. Wm. S. Lozier, Inc., Gibbs St., Rochester, engrs.

Pa., Williamsport—R. R. Rall, dir. Pub. Imprvts., 12,000 lin. ft. additional sanitary sewers. $54,000. L. Musaina, city engr.

S. C., Charleston—Dorchester Terrace, c/o J. C. Long, 88 Broad St., sewerage sys. for suburban development. $30,000. J. McCrady, 7 State St., engr.

Tex., Dallas—Pleasant Grove and Elam Conservation Dist., W. Jenkins, chn., 4001 University St., Dallas, will not install rural sanitary sewerage sys., 17 mi. main line, 10,000 gal. daily capacity disposal plant, etc., south of here. $150,000. CD 5/8—ENR 5/16.

Tex., Denison—C. Scott, mayor, sanitary sewer lines. $175,000. A. M. Brenneke, city engr.

Tex., Sour Lake—Preliminary surveys sewage disposal plant, collecting lines. $25,000. CD 12/15—ENR 12/21.

Sewers, etc. (Continued)

BIDS ASKED

Bids Asked July 11

N. Y., New York—Dpt. P. Wks., Municipal Bldg., Contr. 3, structures and equip. City Island-Hart Island sewage treatment works.

Bids Asked July 16

†N. Y., Fort Niagara (mail Youngstown)—Con. Q.M., Fort Niagara, Youngstown, sewage station and disposal plant. $60,000.

LOW BIDDER

Pa., Souderton—Boro Council, June 13, general contract sewage pump. station, from A. N. Bugbee, Catasauqua. Total est. over **$25,000.** CD 5/29—ENR 6/6.

CONTRACTS AWARDED

Ark., Rogers—E. W. Vinson, mayor, new sewage disposal plant, to E. V. Bird Co., Fayetteville, **$26,315.** Est. $30,000. Awarded 6/14. W. R. Heagler & Son, 314 Com. Natl. Bank Bldg., Little Rock, engrs. CD 5/29—ENR 6/6.

Colo., Cheyenne Wells—Sewers and disposal plant. **WPA. $50,000.** B. Lowther, Colorado Bldg., Denver, engr.

Conn., Bridgeport—P. Brewster, dir. P. Wks., storm and sanitary sewers, Fairfield Ave. from Park Ave. west to Clinton Ave. **WPA. $62,620.** H. L. Rowland, City Hall, engr. CD 4/3—ENR 4/11.

†Ill., Scott Field (Belleville)—Con. Q.M., Scott Field, sewage treatment plant addns., to Couse & Saunders Co., 12740 Lyndon St., Detroit, Mich., **$35,000.** Bids 6/4, awarded 6/14. CD 5/28—ENR 5/30.

Neb., Lexington—Sewage disposal plant, **WPA.** E. H. Dunmire, 1802 B St., Lincoln, engr. CD 3/22—ENR 3/28.

Neb., Loup City — Storm sewerage. **WPA. $74,485.**

N. J., Newark—Rein.-con. combined sewer in S. 12 St., **$120,974**; rein.-con. culvert, storm sewer in Ave. A, **$65,000.** J. Costello, City Hall, WPA and city engr.

N. J. Trenton—Hamilton Twp. Comn., 2090 Greenwood Ave., sanitary sewers, **WPA. $118,044.** D. Riley, 2090 Greenwood Ave., engr.

N. M., Albuquerque—Storm sewer and exten. present sewerage sys., to L. R. Allison, Albuquerque. **$193,000.** Est. $200,000. Bids 6/4, awarded 6/5.

Tex., Anahuac—Storm sewer mains, catch basins, etc. **WPA. $31,000.**

Tex., Gilmer—H. B. Davis, mayor, sanitary sewerage sys. imprvs. **WPA. $26,281.** CD 4/22—ENR 4/25.

Tex., Sulphur Springs—Imprv. sanitary sewerage sys., **WPA. $53,332.**

BRIDGES GRADE CROSSINGS

PROPOSED WORK

Calif., Fresno—State Hy. Dpt., C. H. Purcell, engr., Sacramento, San Joaquin River bridge, 11 mi. north of here. Over $150,000.

Ill., Gilman—State Dpt. P. Wks. & Buildings, Div. Hys., Springfield, 6 span viaduct over Illinois Central R.R. on U.S. Hy. 24, south of here. E. Lieberman, Centennial Bldg., Springfield, ch. state hy. engr.

Ind., Indianapolis—Bd. P. Wks., L. Brandt, chn., City Hall, bids soon, 80 ft. rein.-con. girder bridge over Eagle Creek, W. Michigan St. $45,000. Will issue bonds. M. G. Johnson, City Hall, engr.

Massachusetts—Commonwealth of Massachusetts, Dpt. P. Wks., J. W. Beal, comr., 100 Nashua St., Boston, R. W. Coburn, ch. engr., 276 ft., 3 span, steel arch bridge over Agawam River, between Agawam and West Springfield. $100,000.

N. J., Hackensack—Bergen Co., constructing on reconstructing bridges at Anderson St., Hackensack, Hollywood Ave., Hohokus, Berry's Creek in Carlstadt and Kinderkamack Rd., Westwood. $32,000. R. P. McClave, Administration Bldg., engr.

N. Y., Little Valley—Bd. Supervs. Cattaraugus Co., replacing, repairing bridges and hys. destroyed by flood. $125,000. W. Bowen, Little Valley, co. supt. sys.

N. C., High Point—State Hy. Dpt., Raleigh, and City, 2 overhead bridges over Southern Ry., one at Perry St., other Hamilton St. $90,000.

Oklahoma—State Hy. Dpt., V. T. Moon, engr., Capitol, Oklahoma City, I-beam bridge over Cowskin River south of Wyandotte, $29,000; concrete bridge over Medicine Creek near Manchester, $25,000.

★**Okla., Oklahoma City**—$950,000 bond election Nov. 5, Walnut Ave. Bridge. J. S. Waldrep, city engr.

Tex., Lincoln—State Hy. Comn., B. P. Gentry, chn., Austin, bids soon bridge, approaches over Yeagua Creek, Hy. 21, F.A.P. 1046-A(1), Lee Co.

Tex., Matagorda—Intracoastal Canal Assn., Louisiana-Texas, Galveston, steel, concrete bridge over Louisiana-Texas Intracoastal Canal, Long Bayou Rd. $225,000. Engineer, c/o Canal Assn., and Col. F. S. Besson, U. S. Dist. Engr., Federal Bldg., Galveston, engrs.

Ont., Ottawa — Ottawa Suburban Roads Comn., grade separation on Bowesville Rd. at tracks Canadian Pacific R.R. $40,000. A. K. Hay, c/o owner, engr.

Ont., Port Burwell—Bayham Twp., c/o D. Vallee, clk., St. Thomas, removing present and erecting new steel bridge. $30,000. F. Bell, County Bldg., St. Thomas, engr.

BIDS ASKED

Bids Asked July 1

Connecticut—At office W. J. Cox, comr., Dpt. State Hy., Hartford, steel deck girder bridge, 550 ft. rolled gravel surface treated approaches, on section Wilbur Cross Parkway, Tolland and Willington.

Bids Asked July 1

N. Y., New York—Triborough Bridge Auth., Administration Bldg., Randall's Island, grade separations at Bronx-Pelham Parkway, and at New York, New Haven & Hartford R. R., for Hutchinson River Parkway Exten., Bronx Boro, Contr. H-8. Madigan-Hyland, 2804 41 Ave., Long Island City, consult. engrs.

Bids Asked July 2

Md., Towson—Comrs. Baltimore Co., Towson, 65 ft. steel truss bridge, West Liberty Rd.

Bids Asked July 3

Pa., Phila.—Dpt. P. Wks., Bureau Eng., Surveys & Zoning, City Hall Annex, bridges over Pennsylvania R. R. tracks and over Frankford Creek. Over $25,000. J. H. Neeson, c/o owner, engr. CD 6/12—ENR 6/20.

Bids Asked July 9

†California—Pub. Roads Administration, Federal Office Bldg., San Francisco, Fender Ferry bridge over Pit River, Shasta Natl. Forest, Shasta Co.

Calif., Ventura—Supervs. Ventura Co., constructing Matilija Rd. bridge.

Wisconsin—State Hy. Comn., Madison, Embarrass River Bridge, 35 ft. rein.-con. I-beam, approaches, S.T.H. 29, Regina Rd., C.T. Hy. Q. Federal Aid secondary project, F.A.S. 152-A(1), Contr. 1, Shawano Co.; Bridge 765, two 96 ft. low truss spans, Viroqua-Viola Rd., S.T. Hy. 56, P. 5960, Contr. 2, Vernon Co.; Bridge 688, 11 span, timber trestle, with concrete, steel superstructure, Bridge 689, 25 ft. span timber trestle, with concrete, steel superstructure, Alma-Stockholm-Ellsworth Rd., S.T. Hy. 35, F.A.P. 458-E(1), Contr. 2, Pierce Co.; Bridge 661, 77 ft. span deck plate girder, Wolf River Bridge, Antigo-Neva-S.T.H. 55 Rd., C.T. Hy. Q, Federal Aid Secondary Project F.A.S. 150-A(1), Langlade Co.; Luthain Bridge, approaches road, 0.776 mi. Rockville-Platteville Rd., C.T. Hy. B Federal Aid Secondary Project F.A.S. 146-A(1), Contr. 1, Grant Co.

Bids Asked July 10

California—C. H. Purcell, engr. State Hy. Dpt., Sacramento, 2 rein.-con. slab side hill viaducts on steel piles, 112 and 25 ft. long, 2 mi. west of Guerneville, Sonoma Co.; 2 rein.-con. bridges, 1 over San Joaquin River, other over San Joaquin River Overlow, Fresno and Madera Counties, over $25,000; rein.-con. underpass on spread footings, El Camino Real under University Ave., Palo Alto, Santa Clara Co., over $25,000.

†Ky., Gilbertsville—Tennessee Valley Auth., Knoxville, Tenn., cleaning, painting existing Illinois Central R.R. bridge over Tennessee River. C. H. Garity, dir. Purchases; adv. ENR 6/27.

Bids Asked July 11

Tex., Beaumont—Kansas City Southern Ry. Co., 11 and Wyandotte Sts., Kansas City, Mo., A. N. Reece, ch. engr., superstructure only 240 ft. span, single track vertical lift bridge over Neches River. $400,000. Ash, Howard, Needles & Tammen, Orear-Leslie Bldg., Kansas City, Mo., consult. engrs. CD 4/8—ENR 4/11.

Bids Asked July 12

Kentucky—State Hy. Dpt., Frankfort, repairing pier for bridge over Cumberland River at Smithland, Livingston Co.; 0.056 mi. approaches and bridge over North Fork Licking River near Lewisburg, Mason Co.; cleaning, painting steel work for bridge across Levisa Fork of Big Sandy River Johnson Co.

N. J., South Dennis—E. D. Sterner, state hy. comr., Trenton, 0.568 mi. overpass and approaches at Pennsylvania-Reading Seashore Line., Route 49, Sect. 16, relocation at South Dennis, Cape May Co.; adv. ENR 6/27.

Bids Asked About July 15

★**N. Y., Brooklyn**—Transit Comn., 270 Madison Ave., New York, subway for Atlantic Ave. grade crossing project, Sects. 5 and 6, Montauk to Alabama Aves., for Long Island R.R. Co., A. C. Watson, ch. engr., Penna. Sta., New York. $5,000,000.

Bids Asked July 16

†Tennessee—Tennessee Valley Auth., Knoxville, steel superstructure for I. C. R.R. bridge over Navigation Lock, Kentucky Dam. C. H. Garity, dir. Purchases; adv. ENR 6/27.

Bids Asked July 18

†Virginia — Pub. Roads Administration, Winder Bldg., 17 and F Sts. N.W., Wash., D. C., rein.-con. structure carrying parkway over Route U.S. 250, approaches, relocation Route U.S. 250, etc., Project 1B2, Blue Ridge Parkway, Nelson and Augusta Counties, adv. ENR 6/27.

Bids Asked

Que., Pointe aux Trembles—Provincial Deputy Minister Dpt. Roads, Quebec City, 15 ft. span rein.-con. bridges at Portneuf, 30 ft. span and 2.73 mi. bituminous concrete paving Hy. 2, Nevville Co. $4[illegible]00. E. Gohier, c/o owner, engr.

LOW BIDDERS

Florida—State Road Dpt., Tallahassee, June 18, bridge over Indian River, near Cocoa, Rd. 206, Brevard Co., from T. A. Loving Co., Bank of Wayne Bldg., Goldsboro, N. C., **$303,048.** CD 6/4—ENR 6/6.

Georgia—State Hy. Bd., Atlanta, June 21, raising, widening bridges at Buck Creek and Little Tallapossa River, Carroll Co., from S. B. Slack, Decatur. **$29,870.** CD 6/21—ENR 6/13 under "Roads."

Indiana—State Hy. Comn., Indianapolis, June 18, bridges over White Lick Creek, Hendricks Co., over Haw Creek, Bartholomew Co., from R. L. Schutt, 215 E. New York St., Indianapolis, **$70,850** and **$62,270** respectively, est. $88,263 and $77,902 respectively***over Oliver Ditch, Jasper Co., from Paul J. Messer Constr. Co., 9942 S. Leavitt St., Chicago, Ill., **$43,401,** est. $43,747***over Mill Creek, Putnam Co., from G. H. Harvey, Danville, **$67,632,** est. $84,502. CD 6/21—ENR 6/6.

Kansas—State Hy. Dpt., at office Co. Clk., Winfield, June 14, bridges, Cowley Co., from L. V. Hites, 200 City Bank Bldg., Kansas City, Mo., **$43,202.** CD 6/4—ENR 6/6.

New Jersey—E. D. Sterner, comr. State Hy. Dpt., Trenton, June 21, grade crossing elimination, Sussex Co., from Jannerone Contg. Co., 225 Passaic St., Belleville, and Ell-Dorer Contg. Co., 644 Nye St., Irvington, **$234,968**; concrete bridge, Newark and Kearney, Essex and Hudson Counties, from La Fara-Grecco Co., 149 Verona Ave., Newark. **$244,000.** CD 6/4—ENR 6/6.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, June 18, structures on 2.33 mi. Beaufort Co., from A. H. Guion Co., Kinney Bldg., Charlotte, **$67,160**; 0.277 mi. bridge over Conetree Creek, Edgecombe and Pitt Counties, from Bowers Constr. Co., Whiteville, **$25,611.** CD 6/6—ENR 6/13.

CONTRACTS AWARDED

Colo., Pueblo—Pueblo Co., Pueblo, construction to prevent bank erosion, stabilization bridge abutments, S. Union Ave. Viaduct, **WPA. $71,746.**

Connecticut—State Hy. Comn., at office W. J. Cox, comr., Hartford, steel beam viaduct, approaches, 1,730 ft. hy. Wilton, to Mariani Constr. Co., 222 Forbes Ave., New Haven, **$135,950.** Bids 6/10, awarded 6/18. CD 5/31—ENR 6/6, under Roads.

Mass., Fall River—Bridge over Quequechan River, to New England Foundation Co., Inc., 38 Chauncy St., Boston. **$33,006.** Bids 6/18, awarded 6/21. CD 6/21.

B. C., Hope—Dpt. P. Wks., Victoria, 30x28 ft. steel, concrete bridge, 65 ft. high, on Trans Canada Hy., day labor, under supervision A. Dixon, engr., c/o owner. **$50,000.**

Que., Levis—Dpt. P. Wks., Ottawa, Ont., bridge on Riviere Blanche to St. Vallier on Levis-Rimouski Hy., to Laflamme & Laflamme, Ltd., 8500 St. Hubert St., Montreal, $100,000.

Que., Val Jalbert—Provincial Government, Quebec City, 350 ft. rein.-con. bridge over Quatchowan River, to J. H. Dupont, 66 1 Ave., Shawinigan Falls, **$27,000.** Dpt. P. Wks., Quebec City, engrs.

STREETS AND ROADS

BIDS ASKED

Bids Asked July 1

Connecticut — At office W. J. Cox, comr. State Hy. Dpt., Hartford, rein.-con. paving 209 ft. approaches Trumbull Ave. bridge, Merritt Parkway, Trumbull; bituminous macadam surfacing about 21,919 ft. Quakertown Rd., Ledyard; sheet asphalt paving 7,477 ft. Howe Ave., Shelton, Elizabeth Sts., Seymour and Atwater Aves., Derby, Clifton and Atwater Aves., Ansonia; rein.-con. paving, 3 span steel I-beam bridge, 3,485 ft. Hartford-Springfield Rd., Route U.S. 5, South Windsor and East Windsor; rolled bank run gravel surfacing 6,994 ft. Lynch Rd., Chaplin; 3,549 ft. River and Old Jewett City Rds., Preston; waterbound macadam surfacing 5,275 ft. Newgate Rd., Hatchet Hill Rd., East Granby.

N. J., Hardwick—Gravel surfacing Spring Valley Rd., Sect. 2. H. W. Vetter, Belvidere, engr.

N. J., Sea Isle City—Bituminous concrete on gravel surfacing 4,017 sq. yd. 42, 43 and 45 Sts. H. R. Collison, Jr., City Hall, engr.

Bids Asked July 2

Ill., Waukegan—At office R. M. Lodbell, Lake Co. supt. highways, Court House, furnishing, applying bituminous materials and aggregates for state aid roads.

Streets and Roads (Continued)

Bids Asked July 2

Ia., Hampton—Franklin Co., R. D. Moorhead, aud., grading 41 mi. roads. C. P. Rudisill, co. engr.

Maryland—State Roads Comn., Baltimore, grading, drainage, stabilized soil base course 0.917 mi. Princess Anne-Mt. Vernon Rd., Contr. S-82-1-150 Somerset Co.; grading, drainage, concrete paving 1.649 mi. relocation from east approach Potomac River Bridge, near Ludlow Ferry-Newberg, Contr. Ch. 200-1-849, Charles Co.; treated timber pile bridge over Skinners Run on road from Federalburg to Hurlock, Contr. D-116-1-111, Dorchester Co.; treated timber pile bridges and approaches over Jenkin Creek, Crisfield-Budtown Rd., Contr. S-111-1-150, Somerset Co.

N. J., Vineland—Boro, bituminous concrete on gravel surfacing, sheet asphalt (top course) on brick, also concrete surfacing North East, South East, S. 6, S. 7 and Landis Aves. J. J. Mensone, 2 and Plum Sts., engrs.

N. Y., Long Island City—President Queens Boro, Queens Subway Bldg., 21-10 49 Ave., Long Island City, regulating, laying, relaying sidewalk, 7 ft. wide, Vernon Blvd.; regulating, grading, curbing, recurbing sidewalks, etc., 21 Ave.; grading, regrading, curbing, recurbing, flagging, etc., Bridge Plaza South.

★**Pa., Emsworth (br. Pittsburgh)**—Bd. Allegheny Co., R. G. Woodside, controller, Court House, Pittsburgh, rein.-con. paving 4,127 ft. Ohio River Blvd., Dixmont to Camp Horne Rd. Est. $500,000. Levi Burd Duff, County Office Bldg., Pittsburgh, engr.

Pa., West Lawn—G. W. Wertley, boro secy., 219 Woodside Ave., bituminous material on stone surfacing. $25,000.

Bids Asked July 3

Maine—State Hy. Comn., L. D. Barrows, ch. engr., Augusta, bituminous concrete surfacing 0.45 mi. FAP 104-J, Camden; 1.14 mi. FAP 117-F, Nobleboro; bituminous macadam surfacing, concrete, steel bridge over B. & M. R.R., 0.79 mi. FAP 294-E and FAGH 294-F, Wells. Total over $125,000.

Md., Baltimore — Bd. Awards, City Hall, sheet asphalt paving Bway. from North Ave. to Harford Rd., Contr. SA 729; concrete paving alleys as listed, Contr. CC Alley Paving 155.

Massachusetts — Commonwealth of Massachusetts, Metropolitan Dist. Comn., 20 Somerset St., Boston, W. E. Whittaker, secy., macadam surfacing East Border Rd., Malden and Medford. $25,000.

Mass., Brighton (sta. Boston) — Commonwealth of Massachusetts, Metropolitan Dist. Comn., B. R. Dairs, ch. engr., Parks Div., 20 Somerset St., Boston, concrete traffic circle and approaches at intersection Soldiers Field Rd. and Western Ave. Over $30,000.

†Tenn., Knoxville—Tennessee Valley Auth., Knoxville, furnishing, applying bituminous materials on roads, parking areas and paths, north and south sides Chickamauga Dam, and access road to south side dam; adv. ENR 6/27.

Bids Asked July 8

†Idaho—Pub. Roads Administration, Ogden, Utah, clearing, grubbing, grading 0.94 mi. Ketchum-Clayton Forest Hy., Sawtooth National Forest, Blaine Co.

N. J., Butler—Mayor and Council, Boro Hall, bituminous concrete paving, etc., ½ mi. hy. J. F. Bormuth, boro clk., N. C. Harrison, c/o clk., engr.; adv. ENR 6/27.

Bids Asked July 9

†California — Public Roads Administration, Federal Office Bldg., San Francisco, grading, bituminous treating 7.204 mi. Sects. A, B and C, Route 28, Calpine-Clio National Hy., Tahoe and Plumas National Forests, Sierra and Plumas Counties.

Massachusetts — Commonwealth of Massachusetts, Dpt. P. Wks., J. W. Beal, comr., 100 Nashua St., Boston, bituminous macadam surfacing 22,100 sq. yd. hy., Chicopee, Project PWD S2-10, South Hadley and Granby; steel stringer bridge, concrete deck and approaches, Project Chapter 505A, Colrain; steel stringer bridge, with concrete deck and approaches, Teewaddle Hill Rd., Everett; factory foot bridge over Westfield River, timber suspension foot bridge with steel towers, Huntington. Total est. $109,500.

Wisconsin—State Hy. Comn., Madison, grading, draining, concrete surfacing 0.792 mi. C.T. Highway U, Federal Aid Secondary Project FAS 156-A(1), Contr. 1, Jct. U.S. Hy. 141, Newton Station Rd., Manitowoc Co.; concrete surfacing 2.783 mi. Osseo-Eau Claire-Chippewa Falls and Eleva-Eau Claire Rd., Eau Claire Relocation, U.S. Hys. 12 and 53, FAP 111(4), 17(5), 381-C(2) and 395-C(2), SP- 6387 and 6458, Eau Claire Co.; grading, draining, structures 6.718 mi. Spring Green-Reedsburg Rd., Spring Green-Plain Rd., ST Hy. 23, FAP 611-C(1), Sauk Co.; 9.053 mi. Cumberland Rice Lake Rd., ST Hy. 48, Federal Aid Secondary Project FAS 163-A(1), Contr. 1, Barron Co.; 9.816 mi. Barron-Turtle Lake-St. Croix Falls Rd., St. Croix Falls-Shiloh Rd., U.S. Hy. 8, FAP 408-A(2), Polk Co.; grading, draining 0.623 mi. Viroqua-Viola Rd., ST Hy. 56, SP 5690, Vernon Co.; 3.558 mi. Mercer-Winchester Rd., town road, SP 7140, Contr. 1, Iron Co.; 6.796 mi. Superior-Ashland Rd., Iron River-Ashland Rd., U.S. Hy. 2, FAP 375-B(2) and 121(4), Contr. 1, Bayfield Co.; grading, graveling 0.749 mi. Alma-Stockholm-Ellsworth Rd., ST Hy. 35, FAP 468-E(1), Contr. 1, Pierce Co.; graded aggregate surface (base) course, etc., 9.198 mi. Cumberland-Rice Lake Rd., S.T. Hy. 48, Federal Aid Secondary Project FAS 163-A(1), Barron Co.; graded aggregate 2.372 mi. Mount Ida-Fennimore Rd., U.S. Hy. 18, SP 6, Grant Co.; roadside treatment 1.076 mi. Manitowoc-Two Rivers Rd., Waldo Boulevard Rd., ST Hy. 42, FAP 2(4), Contr. 1, Manitowoc Co.

Bids Asked July 10

California—C. H. Purcell, engr. State Hy. Dpt., Sacramento, applying seal coat 38.5 mi. hys., Butte, Placer, Yolo, Colusa, Sutter, Glenn and Yuba Counties; grading 2 mi. hy., Fresno and Madera Counties; plantmix surfacing crusher run base, 5 mi. between Central Valley and Shasta Summit, Shasta Co.; applying seal coat 37.5 mi. Placer, El Dorado, Sacramento, Nevada and Sierra Counties.

N. J., Ringwood—Boro, bituminous macadam penetration on macadam surfacing Mohawk Trail, Sect. 2. Lowe & Scanlan, 53 Hamilton St., Paterson, engr.

Bids Asked July 11

California—State Hy. Dpt., 808 State Bldg., Los Angeles, C. H. Purcell, engr., imprv. 3 mi. state hy., Los Angeles Co. line to Timber School, Ventura Co. Over $25,000.

Bids Asked July 12

Kentucky—State Dpt. Hys., Frankfort, grading, draining, low type surfacing 4.346 mi. Fullerton-Olive Hill Rd., Carter Co.; 3.515 mi. Hartford-Morgantown Rd., Ohio and Butler Counties; 3 mi. Bonneville-Manchester Rd., Owsley Co.; low type surfacing 2.372 mi. Baileys Switch-Lida Rd., Knox Co.; grading, draining, high type surfacing 1.1 mi. road between Five Points on Murray-Farmington Rd. and Murray-Benton Rd., Callaway Co.; bituminous on waterbound macadam surfacing 6 mi. Martin Wheelwright Jct. Rd., Floyd Co.; high type surfacing 6 mi. Madisonville-Dixon Rd., Hopkins Co.; bituminous surfacing 9 mi. High-Grundy Rd., Pike Co.

Tennessee—State Hy. Dpt., Nashville, paving 7.648 mi. State Hy. 24 between Wilson Co. line and Carthage, Smith Co.; regrading, draining, surfacing 15.368 mi. State Hy. 50 between Fayetteville and Lewisburg, Lincoln and Marshall Counties; reflooring 0.224 mi. section Harahan Bridge, Shelby Co.

Bids Asked July 17

Delaware—State Hy. Dpt., Dover, W. W. Mack, ch. engr., concrete paving 3.4 mi. Warwick-Middletown Rd., Contr. 679, New Castle Co.; 2.161 mi. Contr. 733, Dagsborp-DuPont Rd., Sussex Co.; creosoted timber bridge, Motts Corner-Flemings Landing, Contr. 722-A, Kent Co.; 0.11 mi. service drive, Dover High School, Contr. 747, Kent Co.; bituminous concrete for maintenance, Contr. 748, New Castle Co.; adv. ENR 6/27.

†Ore., Tongue Point—P. Wks. Officer, Navy Yard, Bremerton, Wash., paving, concrete and bituminous seaplane ramp and exten. railroad track, Naval Air Station.

Bids Asked

Kansas—State Hy. Dpt., Topeka, rejected bids 5/22, grading, concrete paving 0.569 mi. FA 164H, Montgomery Co. Will readvertise. CD 5/6—ENR 5/9.

★**Quebec**—Deputy Minister Dpt. Roads, Quebec City, grading, graveling 10.3 mi. from St. Albert to Victoriaville, Ste. Clotilde, $150,000; at village of Notre Dame des Quinze and at Notre Dame des Laurentides, $75,000; 8.58 mi. Hy. 1, Sherbrooke, $120,000; bituminous concrete paving 17.38 mi. Cantic Hy., St. Johns, $170,000; 10.75 mi. Chambly Rd., Longueill, $150,000. Dpt. Roads, Quebec City, engrs.

Que., Three Rivers—Executive Comn., c/o A. Belliveau, city clk., City Hall, asphalt paving several streets. $200,000. P. E. Dufresne, City Hall, engr.

Sask., Moose Jaw—D. Craven, city clk., hardsurfacing 3 streets. $26,500. A. W. Ellison Fawkes, City Hall, engr.

LOW BIDDERS

California—C. H. Purcell, engr. State Hy. Dpt., P. Wks. Bldg., Sacramento, June 19, imprv. 5 mi. Inyo Co., from R. T. Reynolds, Route 4, Box 51, Anaheim, **$36,664*****4.6 mi. Modoc Co., from L. J. Immel, Box 65, Sta. A, Berkeley, **$35,468*****2.1 mi. Madera Co., from Piazza & Huntley, 195 N.6 St., San Jose, and Trewhitt, Shields & Fisher, Pacific Southwest Bldg., Fresno, joint bid **$165,702*****1.1 mi. Napa Co., from E. A. Forde, 640 Sir Francis Drake Blvd., San Anselmo, **$68,757*****3.8 mi. Amador Co., from Fredericksen & Westbrook, 212-13 St., Sacramento, **$37,908.** CD 6/3—ENR 6/6.

†California—Public Roads Administration, Federal Office Bldg., San Francisco, June 20, placing bituminous treated surface (roadmix) on 5.339 mi. Calif. Fed. lands Project 10-C, Lassen Co., from Isbell Constr. Co., Box 2351, Reno, Nevada, **$33,593.** CD 6/7.

†Calif., Albany—Dpt. Agriculture, Div. Purchase, Sales & Traffic, Wash., D. C., grading, planting and roadways, sprinkler sys., drainage sys. for Western Regional Laboratory for Research, Util. of Farm. Prod., for Bur. Agriculture, Chemistry and Eng., U. S. Dpt. Agric., ASRA No. 9220, from Moore & Roberts, 693 Mission St., San Francisco, **$57,000.**

Calif., Monterey—Imprv. Fremont and Abrego Sts., from Granite Constr. Co., Box 900, Watsonville, **$26,820.** CD 6/17—ENR 6/20.

Calif., Redwood City—125,000 sq. ft. concrete sidewalks, from P. Sorenson, 919 Arguello St. **$25,745.**

Calif., San Mateo—City Council, June 17, imprv. streets, Hills Subdivision 1, from L. C. Smith, 235 3 Ave. **$28,998.** CD 5/28—ENR 6/6.

Calif., Stockton—City, June 17, imprv. Orange and Argonaut Sts., from M.J.B. Constr. Co., Elks Bldg., Stockton. **$25,438.** CD 6/4—ENR 6/6.

Delaware—State Hy. Dpt., Dover, F. V. duPont, chn., W. W. Mack, ch. engr., June 19, imprv. 4.861 mi. Contr. 606 and 2.905 mi. Contr. 681, Kent Co., from George & Lynch, Dover, **$53,294** and **$36,701,** respectively. CD 5/27—ENR 5/30.

D. C., Wash.—District Comrs., District Bldg., June 17, widening M St., from Donaldson Paving Co., Inc., 20 Potomac Ave. S.W. **$62,499.** CD 6/6—ENR 6/13.

Georgia—State Hy. Bd., Atlanta, June 21, imprv. 4.655 mi. Carroll Co., from Claussen-Lawrence Constr. Co., 1394 Gwinnett St., Augusta, **$182,961.** Bids 6/21. CD 6/11—ENR 6/13.

Ill., Belleville—St. Clair Co., June 8, furnishing, applying 781,389 gal. road oil, from Bituminous Fuel & Oil Co., 320 N. 4 St., East St. Louis. **$43,523.**

★**Indiana** — State Hy. Comn., Indianapolis, June 18, imprv. Contr. 1394, from O'Connor Constr. Co., Inc., Reisch Bldg., Springfield, Ill. **$504,214,** est. $575,850***Contr. 1987, from Calumet Paving Co., 309 W. Washington St., Indianapolis **$149,012,** est. $160,856 *** Contr. 1986, from Moellering Constr. Co., 241 Murray St., Fort Wayne **$49,903,** est. $72,684*** Contr. 1985, from Shumaker Bros., 627 Circle Tower, Indianapolis **$136,996,** est. $153,519*** Contr. 1984, from Warren Bros. Roads Co., 38 Memorial Dr., Cambridge, Mass. **$262,405,** est. $305,604***Contrs. 1983 and 1982, from McMahon Constr. Co., Rochester **$247,718** and **$211,384** respectively, est. $303,087 and $257,384 respectively. CD 5/31—ENR 6/6.

★**Kansas**—State Hy. Dpt., at office Co. Clk., Winfield, June 14, grading 10 mi. Rice Co., from M. Haase, 2027 Swope Parkway, Kansas City, Mo., **$57,990*****asphalt surfacing 10 mi. Rice Co., from San Ore Constr. Co., McPherson, **$109,089** *** grading 2.963 mi. and 2.563 mi. Barber Co., from Jones Constr. Co., Emporia, **$121,958** and **$89,945** respectively*** grading 5.371 mi. Sedgwick Co. and 5.373 mi. Cowley Co., from List & Clark, 414 Railway Exch. Bldg., Kansas City, Mo., **$26,606** and **$137,108** respectively***5.222 mi. and 3.28 mi. Cowley Co., from Cook & Cone, Ottawa, **$44,160** and **$27,583** respectively. CD 6/4—ENR 6/6.

Maryland — State Roads Comn., Baltimore, June 18, imprv. 2.702 mi. Contr. CO-107-10-260 and D-149-1-150, Caroline and Dorchester Counties, from T. B. Gatch & Sons, 5037 Belair Rd., Baltimore, **$48,888.** CD 6/12.

New Jersey—E. D. Sterner, comr. State Hy. Dpt., Trenton, June 21, imprv. 4.42 mi. Hunterdon and Somerset Counties, from S. Calacurcio, Inc., 40 Journal Sq., Jersey City, **$155,000.** CD 6/4—ENR 6/6.

N. Y., Brooklyn—President Brooklyn Boro, Boro Hall, June 18, asphalt on concrete paving and repaving Neptune Ave. from Bay View Ave. to W. 25 St., from B. Turecamo Contg. Co., Bay 8 and Cropsey Ave., **$31,811.** CD 6/11—ENR 6/13, under Unclassified.

N. Y., New York—Comr. Parks, Arsenal Bldg., Central Park, 6 Ave. and 64 St., June 18, concrete repaving West Drive from 66 to 71 Sts., Central Park, Contr. M-10-240, from Petracca & Banko, Inc., S. Conduit Ave., Laurelton, **$111,661.** CD 6/10—ENR 6/13.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, June 18, imprv. 2.33 mi. Beaufort Co., from Atlantic Dredging Constr. Co., St. Stephens, S. C., **$118,974*****2.87 mi. Durham Co., from Cobb & Homewood, Chapel Hill, **$53,873*****10.9 mi. Onslow Co., from West Constr. Co. of North Carolina, Kinston, **$88,991*****2.99 mi. Guilford Co., from E. W. Grannis, Fayetteville, **$104,283*****0.5 mi. Iredell Co., from Reed & Abee, Inc., Fairview Rd., Asheville, **$26,080*****8.65 mi. Iredell Co. and 6.3 mi. Union Co., to Blythe Bros. Co., 424 S. Brevard St., Charlotte, **$58,053** and **$55,132** respectively***9.77 mi. Martin Co., from Hardaway Contg. Co., 15-11 St., Columbus, Ga., **$49,815.** CD 6/6—ENR 6/13.

Ohio—State Hy. Dpt., Columbus, June 15, imprv. 50.16 mi. Monroe, Morgan, Noble and Washington Counties, from Calvin & Harris, Marietta **$54,924,** est. $58,802***45.13 mi. Harrison Co., from Edgar Sping, Inc., Dover

Streets and Roads (Continued)

$66,005, est. $72,806***2.57 mi. Hamilton Co., from Scully Bros., Atlas Bldg., Cincinnati **$33,374,** est. $33,950***0.835 mi. Cuyahoga Co., from Bently Bros., 8714 Blaine Ave., Cleveland **$93,273,** est. $96,550***0.505 mi. Cuyahoga Co., from Galier Bros. Co., 5713 Euclid Ave., Cleveland **$67,569,** est. $69,000***1.45 mi. Richland Co., from Mansfield Asphalt Paving Co., 31 Orange St., Mansfield **$67,858,** est. $78,850. CD 6/5 and 6/7.

Oregon—State Hy. Comn., Salem, June 14, imprv. Albany-Crabtree sect. Santium Hy., Linn Co., from Warren Northwest, Inc., N.E. 102 and Warren Rd., Portland, **$71,331***** 0.59 mi. Coos Co., from Coos Bay Dredging Co., Marshfield, **$43,963.** CD 6/4—ENR 6/6.

★**Pennsylvania**—At office I. L. Hughes, secy. Hys., Harrisburg, June 21, imprv. 24,924 ft. McKean Co., from E. M. Brown, 320 Walnut St., Clearfield, **$170,994***8,967 ft. Potter Co., from Midwest Constr. & Asphalt Co., 221 N. LaSalle St., Chicago, Ill., **$106,074***11,020 ft. Armstrong Co. and 12,414 ft. Westmoreland Co., from Ralph Myers Constr. Co., Salem, **$252,589** and **$196,779** respectively***13,123 ft. Carbon Co., from Windber Constr. Co., 1317 Midway, Windber, **$75,185***4,780 ft. Lackawanna Co., from H. B. Sproul Constr. Co., 7 Olive St., Scranton, **$31,685***19,361 ft. Lancaster and Dauphin Counties from H. W. Shaull & Son, Mechanicsburg, **$158,515*** 13,705 ft. Chester Co., from Hempt Bros., R.D.1, Camp Hill, **$167,668.** CD 6/10—ENR 6/13.

Que., Montreal—J. E. Gauthier, city clk., June 7, paving Dandurand and Ducharnie Sts., Westbury and Vimy Aves., from Duranceau & Duranceau, 5847 Hamilton St. **$29,983.** CD 6/3.

CONTRACTS AWARDED

Alabama—State Hy. Dpt., C. J. Sherlock, dir., imprv. S 67-C, Macon Co., to Carlton Contr. Co., Albany, Ga., **$40,159***M.S.-213-A, Calhoun Co., to H. N. Donahoo, 517 N. 22 St., Birmingham, **$35,206***MS-213-A, Marion and Walker Counties, to Mitchell Bros. Constr. Co., 3828 1 Ave. S., Birmingham, **$35,997.** Grand total $111,362.

Ariz., Yuma—W. L. Elliston, city engr., 110,000 sq. yd. street paving, placing 2 in. armor coat on 75,000 sq. yd. existing pavement, 35,000 sq. yd. parkways, 34,000 lin. ft. concrete curbing, 200,000 sq. ft. concrete sidewalks, **WPA. $246,823.**

Colo., Fort Collins — Larimer Co., road imprvs. **WPA. $113,558.**

Connecticut—State Hy. Comn., at office W. J. Cox, comr., Hartford, imprv. 4,400 ft. Fairfield Ave., Bridgeport, to Silliman & Godfrey Co., 133 Admiral St., Bridgeport, **$113,020.** Bids 6/10, awarded 6/18. CD 5/31.

Conn., New Britain—Dpt. P. Wks., completing paving Eddy-Glover Blvd., grading and oiling Corbin and Myrtle Aves., widening Lafayette and Arch Sts., grading at Rest Home, removing ledge Davenport Quarry, Stanley St., **WPA. $97,200.** G. Molleur, City Hall, engr.

Florida—State Hy. Comn., Tallahassee, J. H. Dowling, engr., paving, constructing farm-to-market roads, Columbia and Clay Counties, near Lake City and Keystone Heights, own forces. Over **$50,000.**

Ill., Chicago—Cook Co., imprv. 1.7 mi. Sect. 195-0708, to Andrew Ward & Sons, 2735-182 St., Lansing, **$84,949***0.6 mi. Sect. 167-0101 and 0.09 mi. Sect. 031-0808, to J. A. Ross & Co., 228 N. La Salle St., **$48,459*** 0.8 mi. Sect. 062-0707, to Calumet Coal Co., 9540 Marquette Rd., **$39,992.** Grand total $173,400.

Ill., Geneva—Kane Co., bituminous surfacing 5.4705 mi. Sect. 68-IT-MFT, to Rock Road Constr. Co., 5915 Rogers Ave., Chicago. **$34,-062.**

Ill., Joliet—Will Co., imprv. 5.1177 mi. Sect. 40 IT-MFT and 2.2811 mi. Sect. 68 IT-MFT, to Walsh Oil Co., Joliet, **$56,976** and **$32,924** respectively. Bids 6/7, awarded 6/12. CD 5/28.

Iowa—State Hy. Comn., Ames, imprv. 3.726 mi. U.S. 65, Wayne Co. and 0.543 mi. U.S. 71 and Iowa 3, Page Co., to Sani Constr. Co., 102 Forest Ave., Des Moines, **$98,097** and **$37,455** respectively. Bids 6/11, awarded 6/14.

Ia., Cedar Rapids—Linn Co., W. H. Behrens, engr., imprv. roads. **WPA. $382,975.**

Ia., Charles City—Blacktopping 160 blocks (10 mi.) streets, to Hargraves Constr. Co., Mason City, **$59,000.** Bids 6/14. CD 6/11—ENR 6/6.

Kan., Waterville—A. F. Geyer, mayor, imprv. streets, also white way sys. **WPA. $50,000.** Paulette & Wilson, 1006 Kansas St., Topeka, engrs.

†**Mo., St. Joseph**—U. S. Eng., Davidson Bldg., Kansas City, Mo., constructing accretion paving in Missouri River at Kenmore Bend, hired labor and government plant. **$45,000.**

Mont., Bozeman—Paving, storm sewers, to Standard Constr. Co., Bozeman. **$81,146.** Bids 6/7.

Mont., Roundup.— Street imprvs. **WPA. $54,945.**

Neb., Bridgeport—Morrill Co., imprv. roads. **WPA. $78,822.**

Neb., Howells—Street imprvs. **WPA. $68,327.**

Neb., Wahoo—Saunders Co., imprv. roads, **WPA. $113,674.**

Nevada—State Hy. Dpt., Carson City, imprv. 10.68 mi. Elko Co., to W. W. Clyde Co., Springville, Utah. **$287,429.** Bids 6/18. CD 6/7—ENR 6/13.

N. J., Jersey City—Hudson Co., grading, concrete sidewalks, streets, **WPA.** $76,954. F. Radigan, Court House, WPA and co. engr.

★**N. J., Newark**—Asphalt on concrete, paving South Orange Ave. **WPA, $561,763,** paving, resetting curbs, etc. 4 St. from W. Market to Orange Sts., **WPA, $50,912.** G. Andress, City Hall, city and WPA engr.

N. J., North Bergen—Covering 17 acres municipal refuse disposal area with 2 ft. earth fill, **$106,808;** curbing, guttering, sidewalks various streets, **$60,629;** grading, concrete curbing, draining, bituminous macadam paving Fairview Ave., **$88,613, WPA.** Grand total $256,050. J. Muss, Town Hall, WPA and town engr.

N. J., West New York—Concrete sidewalks, etc., streets, 2nd Ward. **WPA. $50,239.** C. Malstrom, Orange and N 6 Sts., Newark, WPA and owners engr.

New York—Dpt. P. Wks., Div. Hys., Albany, resurfacing 1.2 mi. Hy. 5460, Dover Plains, own forces. Over **$25,000.**

New York—Dpt. P. Wks., Div. Hys., Albany, surfacing 9.86 mi. Hys. 995-1369 and 1243-1553, near Truxton and Central Square, own forces. Over **$25,000.**

N. Y., Altona—Grading, widening, subbase gravel ditch, etc., 2.16 mi. Recore Rd., **WPA. $50,000.** C. W. Post, Old P. O. Bldg., Albany, ch. engr. WPA Projects.

N. Y., Hastings on Hudson—Bituminous repaving Main St., own forces. **$25,000.** E. C. Schmidt, hy. comr.

N. Y., Lakewood—E. Eckman, mayor, grading sewers, catch basins, etc. **WPA. $53,397.** Hill & Hill, 24½ Main St., North East, Pa., engr.

N. Y., New York Mills—Grading, curbing, sewers, widening, surfacing, etc., **WPA.** Over **$50,000.** Village Street Dpt., New York Mills, engr.

North Carolina — State Hy. & P. Wks. Comn., W. V. Baise, engr., Raleigh, imprv. roads, Edgecombe Co., **WPA, $64,488.** Awarded 6/19.

North Carolina—State Hy. & P. Wks. Comn., Raleigh, imprv. 7.7 mi. Hertford Co., to Hardaway Contg. Co., 15-11 St., Columbus, Ga., **$42,291***9.78 mi. Pitt Co., to Brown Paving Co., 145 Brevard St., Charlotte, **$65,131** ***9.97 mi. Wayne Co., to J. P. McGuire Constr. Co., Durham, **$50,917***3.37 mi. Cumberland Co. by state forces, **$25,000–$50,000.** Grand total over $158,339. Bids 6/18, awarded 6/22. CD 6/6—ENR 6/13.

O., Canton—Asphaltic concrete repaving Cherry Ave. S. E. from Tuscarawas St. E. to Pennsylvania R. R. tracks, to Ohio Road Imprvt. Co., Harmont Ave. N. E., **$27,763.** Est. $27,000. Bids 6/12, awarded 6/14. CD 6/4—ENR 6/6.

Oregon—State Hy. Comn., Salem, surfacing 1.1 mi., oiling 20.37 mi., Clatsop, Columbia, Tillamook and Washington Counties, to A. Milne Constr. Co., 7253 N.E. Bway., Portland, **$27,252;** imprv. 4.9 mi. Clackamas Co., to Babler Bros., 1636 S.E. 6 Ave., Portland, **$85,365.** Bids 6/14. CD 6/4—ENR 6/6.

Oregon—State Hy. Comn., Salem, imprv. 1.67 mi. Crook Co. and 6.47 mi. Multnomah Co., to H. G. Johnson, Imperial Hotel, Portland, **$64,227** and **$41,502** respectively***2.55 mi. Multnomah Co., to Parker-Schram Co., Couch Bldg., Portland, **$44,103***0.165 mi. Washington Co., to Kern & Kibbe, 42 S. E. Salmon St., Portland, **$135,295.** Grand total $285,127. Bids 6/13. Rejected bids 6/13, imprv. 5.03 mi. Wasco and 0.8 mi. Benton Co., will readvertise. CD 6/4.

South Carolina—State Hy. Dpt., Columbia, grading 1.28 mi. Beaufort Co., to Merritt Dredging Co., Berkeley Court Apartments, Charleston, **$116,034.** Bids 5/14. ENR 6/7—CD 5/9.

Tenn., Franklin — Williamson Co., grading, imprv., bridging, etc., farm-to-market roads. **WPA. $110,000.**

Tex., Colorado City—Street imprvs., day labor and sub-contract, **$33,000.** Bonds voted.

Tex., Mineola—C. J. McGlothlin, mayor, asphalt on rock surfacing, etc., 75 blocks, to Texas Asphalt Constr. Co., P. O. Box 484, Malakoff, approx. **$110,000.** Bids 5/8. CD 4/22—ENR 4/25.

Tex., Navasota—Grimes Co., c/o G. C. Fahey, judge, grading, grubbing, bridging, etc., 4 precincts. **WPA. $189,090.** County Eng. Branch, Navasota, engrs.

Utah—State Rd. Comn., Salt Lake City, imprv. 19.041 mi. Wayne Co., to J. M. Sumsion, Springville, **$34,153.** Est. $37,000. Bids 6/19. CD 6/12.

Virginia—State Hy. Dpt., Richmond, imprv. 1.39 mi. Orange Co., to E. C. Bramham Co. and G. H. Lewis & Son, Halifax, **$84,850*** 0.39 mi. concrete base, 1.2 mi. bituminous topping, Arlington Co., to R. K. Williams, Belleville and Moore Sts., Richmond, **$28,904** ***2.1 mi. Norfolk Co., to Eastern Supply Co., 2510 Chamberlayne Ave., Richmond, **$34,336.** Grand total $148,090. Bids 6/20. CD 6/10—ENR 6/13.

Wis., Milwaukee—Milwaukee Co. asphalt paving at county airport, to Payn[illegible] of Wisconsin, Inc., 735 N. Water S[illegible] Bids 5/2, awarded 6/18. $29,120.

Alta., Edmonton—Asphalt paving, Crown Paving & Constr., Ltd., 11351 82 S[illegible] Bids June 17. CD 6/7—ENR 6/13. $47,109.

Ont., Kitchener—Waterloo Co., oil and chip resurfacing 16 mi. pavements, [illegible] labor, under supervision D. J. Emrey, [illegible] engr. **$80,000.**

Quebec — Provincial Government, Quebec City, grading, graveling 9½ mi. Quebec-Ste. Anne de Beaupre Hy., to Chapleau & St. Marie, Quebec City. **$214,165.**

Que., Montreal—Paving Belanger from Pie IX Blvd. to Montel St. Michael, to Local Constr. Co., Ltd., 4740 Iberville St. $18,745.

EARTHWORK, WATERWAYS

PROPOSED WORK

†**Calif., Auburn**—U. S. Eng., 208 Post Office Bldg., Sacramento, constructing [illegible]-con. abutment protection slab, covering 7,500 sq. ft. area, 100 ft. concrete gravity wall, North Ford Dam.

Fla., Fort Lauderdale—F. M. Jecker, Fort Lauderdale, concrete, stone bulkheads, etc., S.W. 9 Terrace and S.W. 5 Pl. Over $15,000.

Iowa—Harrison-Pottawattamie Drainage Bd., Council Bluffs, surveys widening at points and deepening Willow Creek. $18,000. F. Smith, Missouri Valley, engr.

Iowa—State Conservation Comn., Des Moines, dams at west end Rice Lake in Worth and Winnebago Counties and across Turkey River at Elkader. Over $15,000.

Neb., West Point — Cuming Co., repairing flood damage and flood control work. $100,000. Application made to WPA.

★†**Pennsylvania**—U. S. Eng., 2 and Chestnut Sts., Phila., deepening Delaware River Channel to 40 ft., from Navy Yard, Phila., to sea. $4,250,000.

★**Tenn., Jefferson City**—Tennessee Valley Auth., Knoxville, preliminary surveys constructing Cherokee Dam on Holston River, 2½ mi. north of here. $36,000,000. Project recommended by Council of Natl. Defense.

★†**Tex., Corpus Christi**—U. S. Eng., Galveston, dredging 17 mi. channel from Corpus Christi Harbor to Ensinal Peninsula, near Flour Bluff. $2,700,000.

B. C., Oyster River—Batco Development Co., Ltd., c/o A. E. Simpson, mgr., Vancouver, breakwater and booming ponds construction in Oyster Bay Harbor. $40,000.

N. S., Sydney—Dominion Government, Ottawa, Ont., 2 submerged breakwaters in Sydney Harbor, etc. $30,000. Dpt. P. Wks., Ottawa, Ont., engr.

†**Alaska, Kodiak**—U. S. Eng., War Dpt., Wash., D. C., harbor imprvs. $70,000. Appropriation pending.

†**Alaska, Sitka**—U. S. Eng., War Dpt., Wash., D. C., harbor imprvs. $109,000. Appropriation pending.

BIDS ASKED

Bids Asked July 3

Md., Baltimore—Bd. Awards, City Hall, maintenance dredging Baltimore Harbor, incl. Patapsco River and tributaries.

Bids Asked July 5

†**Utah**—Bureau Reclamation, Denver, Colo., fabricated steel pipe for South Ogden distr. sys., Ogden River, Spec. 1377-D.

Bids Asked July 8

†**New Mexico** and **Texas**—Bureau Reclamation, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars railroad destination, transformers, oil circuit breaker, connecting switch, etc., for Elephant Butte power plant; transformers for Hot Springs substation, Rio Grande Project, Spec. 1378-D.

†**Wash., La Conner**—U. S. Eng., 700 Central Bldg., Seattle, 300 ft. timber, pile dike, at Hole-in-the-Wall, Sinomish Slough, near here.

Bids Asked July 9

†**Del., Rehoboth**—U. S. Eng., 900 Customhouse, Phila., Pa., repairing steel sections jetties, Indian River Inlet.

Mass., Hull—Commonwealth of Massachusetts, Dpt. P. Wks., J. W. Beal, comr., 100 Nashua St., Boston, Mass., furnishing, placing approx. 2,600 tons heavy stone rip rap in raising and extend existing breakwater.

Bids Asked July 10

†**Calif., Sacramento**—U. S. Eng., 208 Post Office Bldg., Sacramento, enlarging, strengthening, setting back existing levees, Part A, along east levee Feather River, 2 mi. north of Starr Bend, 754,600 cu. yd., Part B, along east levee Feather River and north levee Bear River from point ¼ mi. south from Plumas Landing to Western Pacific R.R. Bridge over Bear River, 965,400 cu. yd.

†**Mass., Buzzards Bay**—U. S. Eng., Park Square Bldg., Boston, Cape Cod Canal riprapping project, East Boat Basin.

Earthwork, etc. (Continued)

Bids Asked About July 10

†**Tenn., Nashville**—U. S. Eng., War Dpt., Nashville, drilling at Dale Hollow and Letcher-Harlan Co. line dam site; raising crest of Dam 6, Cumberland River.

Bids Asked July 11

†**Arizona** and **California**—Bureau Reclamation, Denver, Colo., furnishing oil circuit breaker, disconnecting switches, potential transformers, current transformers, lightning arresters, coupling capacitors, potential devices for Phoenix Terminal sub-station and for Parker power plant, Parker Dam power project, Spec. 918.

Tex., Throckmorton—S. Stribling, mayor, earthen dam, $35,000. Freese & Nichols, Cappa Bldg., Fort Worth, engrs.

Bids Asked July 12

†**Tenn., Knoxville**—Tennessee Valley Auth., Knoxville, trash racks for penstock intakes and skimming screens, for Wheeler Dam, Units 3 and 4; adv. ENR 6/27. Bids 6/3 rejected.

Bids Asked July 15

†**Kentucky**—Tennessee Valley Auth., Knoxville, furnishing, fabricating, selling, del. structural steel intake gate rail support tower for Kentucky Project. C. H. Garity, dir. Purchases; adv. ENR 6/27.

†**Tennessee**—Tennessee Valley Auth., Knoxville, furnishing, fabricating, selling, del. handrailing for Lock at Kentucky Dam; adv. ENR 6/27.

Bids Asked July 16

†**Ind., Evansville**—U. S. Eng., Louisville, Ky., dredging 478,000 cu. yd. sand gravel, in Ohio River, Tell City, Evansville and Slim Island Bars.

†**Louisiana**—U. S. Eng., 2nd Dist., New Orleans, excavating approx. 1,100,000 cu. yd. earthwork, etc., Bayou Latenache Drainage Canal, Morganza Floodway, Morganza; constructing approx. 595,000 cu. yd. earthwork, Mississippi River Levees, New Orleans.

†**Michigan**—U. S. Eng., Duluth, Minn., steel sheet pile revetment, east side of Upper Entrance to Keweenaw Waterway, Inv. 379-40-54.

Bids Asked July 17

†**Louisiana**—U. S. Eng., 1st New Orleans Dist., New Orleans, removal, disposal approx. 160,000 cu. yd. material, in maintenance dredging 11x80 ft. channel, Bayou Petit Anse, and 7x60 ft. channel at mouth of McIlhenny Canal.

Bids Asked July 19

†**New Jersey**—U. S. Eng., New York Dist., 39 Whitehall St., New York, dredging, disposing 2,288,560 cu. yd. place measurement, all material except ledge rock from Raritan River; adv. ENR 6/27.

LOW BIDDERS

†**Colorado**—Bureau Reclamation, Customhouse, Denver, June 20, excavation of continental Divide tunnel from station 7 plus 00 to Station 72 plus 00, Colorado Big Thompson Project, Spec. 912, from Platt Rogers, Inc., 29 and Court Sts., Pueblo. **$389,370.** CD 5/28—ENR 5/30.

†**Mass., Chicopee**—U. S. Eng., 819 Industrial Trust Bldg., Providence, R. I., June 21, Paderewski Pumping Sta., east bank Connecticut River, from Intercounty Constr. Corp., Sylvan Pl., Rye, N. Y. **$68,751.** CD—ENR 6/6.

★†**Mississippi**—U. S. Eng., P. O. Box 60, Vicksburg, June 20, 2,680,000 cu. yd. earthwork, east bank Mississippi River Item 484-L, Greenville New Levee landside berm, 950,000 cu. yd., Item 493-L, Shawneetown Landside Berm, 145,000 cu. yd. from J. W. Hendricks, Alexandria, La., **$146,015** and **$22,280** respectively***Item 399-L, Willow Slough Berm exten., 535,000 cu. yd. and Item 426-L, Catfish Point, landside Berm, 475,000 cu. yd. from Hooper Constr. Co., 1125 Kings Ave., South Jacksonville, Fla., **$80,250** and **$71,250** respectively***Item 411-L, Niblett Landside Berm, 100,000 cu. yd., from Noble Contg. Co., Fayette, **$18,280***** Item 459-L, Tarpley Landside Berm, 475,000 cu. yd., from T. L. James & Co., Inc. and Guilliams Bros., Ruston, La., $71,250. Est. $950,000. CD 6/4—ENR 6/6.

†**N. Y., Binghamton**—U. S. Eng., Mutual Security Bldg., June 17, flood protection project (Sec. 2), from Tuckahoe Constr. Co., 116 Columbus Ave., Tuckahoe, **$434,000.** CD 5/21—ENR 5/23.

★†**N. Y., Corning**—U. S. Eng., Security Mutual Bldg., Binghamton, June 21, constructing flood protection project, Sect. 1, from Clevorock, Inc., 420 Lexington Ave., New York, **$623,259.** CD 5/24—ENR 5/23.

†**O., Ironton**—U. S. Eng., Post Office and Court House, Cincinnati, June 17, 6 rein.-con. pump. stations, machinery complete for South Unit. Flood Protection Works, Project 1, pump. stations, from Norton & Nadalin, 45 S. 6 St., Columbus, **$134,269*****Project 2, pumps, motors, etc., from Engstrom & Wynn, 1117 Chapline St., Wheeling, W. Va. **$184,970.**

†**Tennessee**—U. S. Eng., P. O. Box 97, Memphis, June 14, substructures of Nonconnah Creek pump. sta., from Ziegler Constr. Co., American Natl. Bank Bldg., Nashville. **$196,-910.** CD 5/20—ENR 5/23.

Wash., Chehalis—Bonneville Power Administration, P. O. Box 3527, Portland, Ore., June 18, control house and untanking tower, Inv. 1080, from O. R. Wayman, Couch Bldg., Portland, Ore. **$100,808.** CD 6/4—ENR 6/6.

CONTRACTS AWARDED

†**Illinois**—U. S. Eng., 816 U. S. Court House and Custom House, St. Louis, Mo., placing 1,936,000 cu. yd. earthwork and constructing 7 gravity drainage structures, in rebuilding and enlarging levees in Kaskaskia Island Drainage & Levee Dist. of Randolph Co., on Mississippi River, to S. W. Hardwick Co., Beardstown. **$213,260.** CD 6/12—ENR 6/20.

N. J., Newark—Essex Co., Hall Records Bldg., excavating 10,000 cu. yd. ledge rock and boulder from stream bed running from Branch Brook Park, Belleville, to West St., Bloomfield, **$120,000**; wet excav. from various stream beds throughout county, **$300,000. WPA.** W. Stickel, Hall Records Bldg., WPA and co. engr.

†**Ore., Portland**—U. S. Eng., 628 Pittock Blk., clearing, grubbing sites for U. E. Engineer dams, Cottage Grove and Fern Ridge, near Eugene. **WPA. $147,650.**

Pa., Emporium—Boro Council, stone and masonry dike along west branch of Sinnamahoning River from West Ward to Pine St., dredging stream. **WPA. $32,858.** C. Barwis, Warren, boro engr.

†**Tenn., Memphis**—U. S. Eng., P. O. Box 97, Memphis, drainage pump. units in Munconnah and Cypress Creek Stations, to S. Morgan Smith Co., York, Pa., **$279,630.** Bids 5/21, awarded 6/6. CD 4/23—ENR 4/25.

Tex., Raymondville—Willacy Co. Water Control & Imprvt. Dist., R. Rikard, pres., 131,950 sq. ft. concrete hand lining, to Briggs-Darby, Inc., Pharr, **$19,472.** Bids 6/1. CD 5/15—ENR 5/23.

★†**Canal Zone, Coco Solo**—Yards & Docks, Navy Dpt., Wash, D. C., constructing naval breakwater, naval air station, to Frederick Snare Corp., 114 Liberty St., New York. Est. **$2,840,000.** Awarded 6/20.

UNCLASSIFIED

PROPOSED WORK

Ala., Birmingham — HANGAR, etc. — One Hundred and Sixty Observatory Squadron, c/o Major H. L. Badham, plans by W. C. Douglas, c/o owner, 12 plane hangar, runways, aprons, etc. $106,000. I. E. Morris, Empire Bldg., engr.

Ark., Blytheville—TELEPHONE SYSTEM—S. W. Bell Telephone Co., Blytheville, new telephone sys. $150,000.

Calif., Oakland—GAS PIPE LINE—Pacific Gas & Electric Co., 245 Market St., San Francisco, completed plans natural gas pipe line under Oakland Estuary (Oakland Inner Harbor). $85,000.

Calif., Redwood City—PORT FACILITIES—Permanent Corp., P. O. Box 29, San Jose, shipping facilities. Over $40,000.

Conn., Hartford—AIRPORT WORK—Bd. Contr. & Supply, 550 Main St., runway, Brainard Field. $325,000.

Conn., Norfolk — SWIMMING POOL — S. Ford, 15 Broad St., New York, sketches by Taylor & Levi, 105 W. 40 St., New York, 30x60 ft., rein.-con., rein. steel swimming pool. $30,000.

★†**Fla., Opa-Locka** — AIR BASE — Yards & Docks, Navy Dpt., Wash., D. C., naval air base. $3,500,000.

Fla., St. Petersburg — AIRPORT — Comrs. Pinellas Co. W. A. McMullen, engr., Clearwater, master airport, near here. Over $100,-000. Election soon to vote on construction. CD 5/15—ENR 5/23.

Fla., St. Petersburg — STADIUM — Major league baseball stadium. Over $25,000. Special election soon to vote on construction. CD 1/17—ENR 1/25.

Fla., South Bay—PLANTATION CAMP—United States Sugar Corp., Clewiston, plantation camp, near here. $50,000.

†**Fla., Jacksonville** — MACHINE GUN RANGE—Bureau Supplies and Accounts, Navy Dpt., Jacksonville, machine gun range at Naval Air Station. $40,000.

Ia., Burlington—AIRPORT—Imprv., enlarging airport. Over $25,000.

Ia., Cedar Rapids—SWIMMING POOL, etc—L. J. Storey, city clk., swimming pool, bath house. Howard R. Green Co., 208 Bever Bldg., consult. engrs. CD 5/21—ENR 5/23.

Kan., Wichita—STADIUM—University of Wichita, R. Elliott, secy., concrete stadium. Application made to WPA. L. Schmidt, Wichita, archt.

Michigan — UNDERGROUND CABLE — Michigan Bell Telephone Co., 1365 Cass Ave., Detroit, 40 mi. underground cable from Bay City to Standish. $236,365.

Mich., Pleasant Ridge—PLANT—Guardian Industries, Inc., Royal Oak, furnace assembly plant also fuel oil storage and distr. depot along Grand Trunk Ry. east of Gainsboro Ave. Over $40,000. Private plans.

Mo., Sikeston—AIRPORT IMPROVEMENTS—Mayor, imprv. municipal airport, 3 steel hangars, 2 classrooms, 4 barracks, etc. $165,000.

Montana—PIPE LINE—Missoula Coke & Gas Co., Missoula, 90 mi. pipe line from Garrison to Missoula. $75,000.

Mont., Missoula—AIRPORT—Missoula Co. Airport Bd., Missoula, (3rd unit) airport, grading, draining, sewerage sys., lighting. $200,000. Will make application to WPA.

Nebraska — RURAL ELECTRIC LINES — York County Power Dist., H. Sloneker, superv., York, additional 200 mi. rural transmission lines. Will apply to REA for additional loan.

Neb., Falls City—PETROLEUM DEVELOPMENT WELLS—Pawnee Royalty Co., Falls City, drilling wells for extensive development potential petroleum producing area in Richardson Co. to Harry Harper, Falls City. Total est. over $50,000.

Neb., Omaha—AIRPORT—D. Butler, mayor, imprv. airport, extensive runway lengthening. $250,000. Application made to WPA.

N. J., Brielle—PARK—New Jersey State Dpt. Conservation and Development, Trenton, development 800 acre state park on Manasquan River, incl. museum. Over $100,000.

N. J., Camden — AIRPORT IMPROVEMENTS—Airport impvs., runways extens., grading, etc. Over $50,000. N. S. Ludington, in charge.

N. J., North Bergen—SWIMMING POOL—Concrete swimming pool with equip. at South St. $58,758. WPA. J. Muss, Town Hall, WPA & town engr.

N. J., Union City—PLAYGROUND—Playground, watermains, sewers, retaining walls, fence, etc. WPA. $50,737. C. Malstrom, Orange and N. 6 Sts., Newark, WPA and owner's engr.

N. J., West New York—PARK—Imprv., enlarging existing park sys. throughout town. $96,861. WPA. C. Malstrom, Orange and N 6 Sts., Newark, WPA and owner's engr.

New York — NATURAL GAS DEVELOPMENT — Sylvania Corp., c/o United Natural Gas Co., Oil City, Pa., developing Oriskany sand natural gas properties, drilling wells, Jasper Twp., Steuben Co. $50,000. J. G. Montgomery, c/o owner, engr.

N. Y., Bath—ATHLETIC FIELD, etc.—Bd. Educ., Dr. A. J. Paddock, pres., athletic field and recreation park, 5½ acre site, Liberty St. $25,000. Bond election soon. CD 2/13—ENR 2/15.

N. Y., Olean—GAS PIPE LINE—Home Gas Co., c/o Producers Gas Co., 1st. Natl. Bank Bldg., 8 in. natural gas pipe line from Knapp's Creek to Olean. Over $25,000.

N. Y., Schenectady—TENNIS COURTS—Tennis courts, water lines, etc., 2nd Ward Park. Over $25,000.

O., Cincinnati — SWIMMING POOL — Combination swimming pool at Dyer school playground, incl. 2 pools and shelter building. $52,000. W. A. Becker, Mercantile Library Bldg., engr.

O., Youngstown — GAS DEVELOPMENT — Magnolia Petroleum Co., Beaumont, Tex. (subsidiary of Standard Oil of New Jersey, 30 Rockefeller Plaza, New York, N. Y., development natural gas and crude oil properties in western Mahoning Co., incl. drilling unspecified number of wells, connecting and gathering pipe lines, steel tank storage facilities. Over $25,000.

Okla., Aylesworth — OIL PIPE LINE — Stanolind Pipe Line Co., Philcade Bldg., Tulsa, surveys 5 mi. 4 in. oil pipe line from Pure Oil Co. well to Frisco R.R. $26,000.

Okla., Lawton—ELECTRIC DISTRIBUTION SYSTEM—S. W. Light & Power Co., Lawton, election July 23 to vote new 25 year franchise with provision for enlargement electric distr. sys. if election is ratified. $30,000.

Ore., The Dalles—RURAL POWER LINE—Wasco Electric Cooperative, Inc., The Dalles, 263 mi. rural power line. REA financing. $150,000. N. McKenzie, c/o owner, engr.

†**Ore., Tongue Point**—RAMPS, etc.—P. Wks. Officer, Puget Sound Navy Yard, Bremerton, Wash., bids soon, seaplane ramps, Naval Air Base, $60,000; dredging for bulkhead, filling, grading, at Naval Air Station, $300,000.

Pennsylvania—GAS DEVELOPMENT, etc.—T. W. Phillips Gas & Oil Co., J. F. Deemer, supt., 212 4 Ave., Tarentum, extensive natural gas and oil development, drilling, 2,500 to 3,500 ft. wells, steel storage facilities, connecting and gathering pipe lines, pump. stations, etc., properties in Greene, Indiana and Clarion Counties. Over $50,000.

Unclassified (Continued)

Pa., Erie—AIRPORT IMPROVEMENTS—M. J. Henry, city clk., expanding Port Erie airport, exten. hard surfaced runways, constructing hangars, etc. Over $100,000. C. K. Pulling, dpty. city engr. in charge. A. N. Aitkin, city engr.

Pa., Erie—HANGARS—C. R. Barber, mayor, hangars at airport. Over $100,000. C. K. Pulling, City Engineers Office, engr.

Pa., Ligonier — ATHLETIC FIELD — Boro Council and Ligonier High School Athletic Assn., modern athletic field, football field, stadium-type seating, etc., on 12 acre site, Fairfield St. $25,000.

★**†Pa., Phila.**—DRY DOCK—Yards & Docks, Navy Yard, dry dock at Navy Yard. $10,000,000.

Pa., Upper Darby—GRANDSTAND—Drexel Institute of Technology, 32 and Chestnut Sts., Phila., grandstand and athletic field. Over $25,000. Simon & Simon, Fidelity Phila. Bldg., Phila., archts.

S. D., Ward—TRANSMISSION LINES, etc.—Election July 2, to vote on granting franchise to Union Public Service Co., Ward, for transmission lines and electrical distr. sys. W. Lamp, city clk.

Texas—RURAL ELECTRIC LINES—Lamar County Electric Cooperative Assn., Paris, 122 mi. rural electric lines on 2nd section of project. Freese & Nichols, Capps Bldg., Fort Worth, engrs.

Tex., Center—GAS DISTRIBUTION SYSTEM—T. L. Hurst, mayor, natural gas distr. sys. 2 to 6-in. steel pipe, meters, booster station. $50,000. Freese & Nichols, Capps Bldg., Fort Worth, engrs. CD 2/2—ENR 2/8.

Tex., New London—SWIMMING POOL—Bd. Educ., c/o E. W. Reagan, pres., plans by P. M. Geren, 806½ Burnett St., Fort Worth, and c/o Board, 1 story, 60x250 ft. swimming pool, gymnasium; 1 story, 80x120 ft., brick, concrete vocational shop. $125,000. $100,000 bonds voted. CD 4/17—ENR 4/25.

†Tex., Palestine—FISH HATCHERY—Dpt. Interior, Wash., D. C., fish hatchery. $40,000.

Tex., Tyler—AIRPORT IMPROVEMENTS—G. D. Fairtrace, $50,000 bond election airport imprvs., new lighting sys., steel hangars, runways, shop. About $250,000. WPA.

Tex., University Park (P. O. Dallas)—PARK IMPROVEMENTS—Municipal park imprvs. $150,000.

Washington—RURAL LINES—Grays Harbor P. U. D. Aberdeen, rural electric distr. lines, to Humptuplips Valley, exten. Copalis Beach and Pleasant Ridge. $51,576. R. W. Beck, c/o owner, engr.

Wash., Clarkston — CEMETERY — C. B. Edwards, Clarkston, cemetery on 45 acre tract, underground sprinker sys., driveways, artificial lake, sunken gardens, etc. $200,000.

★**Wash., Seattle** — ATHLETIC CENTER — Park Bd., County-City Bldg., athletic center in lower Woodland Park, football and baseball fields, field house, amphitheater and athletic track. $500,000.

West Virginia — GAS DEVELOPMENT — Pittsburgh & West Virginia Gas Co., Inc., 435 6 Ave., Pittsburgh, Pa., extensive natural gas development, drilling unspecified number 2,500 to 3,500 ft. wells, connecting pipe lines, gathering sys., booster stations, etc., Marion and Ritchie Counties. Over $40,000.

Alta., Edmonton—GAS LINE—North Western Utilities Ltd., J. Garrett, mgr., 6 mi. 10¾ in. and 8 mi. 6 in. gas pipe line in Kinsella Zone, 104,000; local gas pipe lines, dehydration equip. for companys production sys. $70,000.

Alta., Holsom—AERODROME, etc.—Dominion Government, Ottawa, Ont., additional aerodrome development, also frame buildings, concrete fdn. $204,900. Dpt. Air Defence, Ottawa, Ont., archts. Dpt. Transport, Ottawa, Ont., engrs.

★**Alta., Macleod**—AIRPORT—Secretary Dpt. Munitions & Supplies, Ottawa, Ont., bids soon airport development, clearing, grading, smoothing, draining, fencing, hard surfaced runways, also service flying training school. $750,000. G. L. McGee, c/o owner, engr.

Alta., Stettler—LAKE RECONSTRUCTION, etc.—Reconstruction work at Buffalo Lake and constructing tourist camp. $30,000. W. Murgaroyd, Town Hall, engr.

B. C., Alliford Bay—AIRPORT—Dominion Government, Ottawa, Ont., additional airport development, clearing, grading, draining, fencing. $50,000. Dpt. Transport, Ottawa, Ont., engrs.

B. C., Bella Bella—AERODROME—Dominion Government, Ottawa, Ont., aerodrome and necessary buildings. $75,000. Dpt. Air Defence, Ottawa, Ont., archts. Dpt. Transport, Ottawa, Ont., engrs.

B. C., Coal Harbor — AERODROME — Dominion Government, Ottawa, Ont., aerodrome development, necessary structures. $75,000. Dpt. Air Defence, Ottawa, Ont., archts. Dpt. Transport, Ottawa, Ont., engrs.

B. C., Kamloops — AIRPORT — Dominion Government, Ottawa, Ont., additional airport development, clearing, grading, runways, draining, fencing. $60,000. Dpt. Munitions & Supply, Ottawa, Ont., engr.

B. C., Prince Rupert—AIRPORT—Dominion Government, Ottawa, Ont., airport development, fencing, grading, clearing, draining, runways etc. $70,000. Dpt. Transport, Ottawa, Ont., engrs.

B. C., Vancouver—AERODROME DEVELOPMENT — Dominion Government, Ottawa, Ont., additional aerodrome development, clearing, grading, draining, runways, fencing. $44,-825. Dpt. Transport, Ottawa, Ont., engrs.

B. C., Vancouver—AIRPORT FACILITIES—Exten. airport facilities, clearing, grading, drainage, etc., on additional 25 acres purchased for same. $30,000. Dpt. Transport, Ottawa, Ont., engrs.

B. C., Victoria—AIRPORT—Dominion Government, Ottawa, Ont., additional airport development, clearing, grading, draining, runways, fencing. $50,000. Dpt. Transport, Ottawa, Ont., engrs.

★**Man., Macdonald** — AIRPORT — Secretary Dpt. Munitions & Supplies, Ottawa, Ont., bids soon airport development, clearing, grading, smoothing, draining, fencing, hard surfaced runways, also constructing air service flying school. $800,000. G. L. McGee, c/o owner, engr.

Man., Vivian (Winnipeg, Postal Dist.)—AERODROME—Dominion Government, Ottawa, Ont., aerodrome development, clearing, grading, draining, runways, fencing. $60,000. Dpt. Transport, Ottawa, Ont., engrs.

Newfoundland, Red Bay (Dist. of Labrador) — Dominion Government, Ottawa, Ont., airport development, clearing, grading, draining. Initial cost $60,000. Erection several buildings at later date. Dpt. National Defence, Ottawa, Ont., archts. Dpt. Transport, Ottawa, Ont., engrs.

N. S., Dartmouth — AIRPORT — Dominion Government, Ottawa, Ont., airport development, clearing, grading, draining, fencing, runways. $60,000. Dpt. Transport, Ottawa, Ont., engrs.

N. S., Debert Station—AERODROME—Dominion Govt., Ottawa, Ont., aerodrome development, elementary flying training school. $150,000. Dpt. Air Defense, Ottawa, Ont., archt. Dpt. Munitions, Ottawa, Ont., engrs.

N. S., North Sydney—AERODROME—Dominion Government, Ottawa, Ont., further aerodrome development and necessary buildings. $150,000. Dpt. Air Defence, Ottawa, Ont., archts. Dpt. Transport, Ottawa, Ont., engrs.

N. S., Yarmouth — AIRPORT — Dominion Government, Ottawa, Ont., airport development, clearing, grading, draining, fencing. $50,000. Dpt. Transport, Ottawa, Ont., engrs.

Ont., Bath — AERODROME DEVELOPMENT—Secretary Dpt. Munitions & Supplies, Ottawa, bids soon, aerodrome development, clearing, stumping, smoothing, seeding, draining, fencing. $125,000. G. L. McGee, and W/C R. R. Collar, c/o owner, engrs.

Ont., Brockville—AIRPORT—Thousand Islands Flying Service Ltd., c/o J. E. Delaney, Gananogue, airport in connection with British Commonwealth Training Scheme. $50,000. Dpt. Air Defence, Ottawa, engrs.

Ont., Chatham—GAS WELLS—Dominion Natural Gas Co. Ltd., Chatham, drilling new gas wells, etc., in front Talbot Rd. on Lake Erie. $75,000.

Ont., Fort William—AIRPORT—Thunder Bay Air Training Schools Ltd., Fort William, airport and training school. $50,000.

Ont., Hagersville — AIRPORT — Dominion Government, Ottawa, additional development work at airport, constructing several frame buildings, concrete fdns. $268,300. Dpt. Transport, Ottawa, engrs.

Ont., Goderich—RELIEF LANDING FIELD—Secretary Dpt. Munitions & Supplies, Ottawa, bids soon developing relief landing field, clearing, grading, smoothing, draining, 1 hard surfaced runway, at Sky Harbor, 12 mi. from here. $75,000. G. L. McGee, c/o owner, engr.

Ont., Malton—AIRPORT—Dominion Government, Ottawa, additional development work at airport. $70,500. Dpt. Transport, Ottawa, engrs.

Ont., Ottawa—AIRPORT IMPROVEMENTS—Secretary Dpt. Munitions & Supplies, Ottawa, bids soon, No. 3 Manning Depot, accommodating 450 personnel at Rockcliffe Airport. $200,000. W/C. R. R. Collar, c/o owner, engr.

★**Ont., Port Albert**—AERODROME, etc.—Secretary Dpt. Munitions & Supplies, Ottawa, bids soon aerodrome development, clearing, grubbing, grading, smoothing, draining, hard surfaced runways, and air navigating school, 12 mi. north of Goderich. $700,000. W/C R. R. Collar, c/o owner, engr.

Ont., Port Credit—OIL STORAGE DEPOT—Good Rich Oil Refining Co., Ltd., Port Credit, oil storage depot. $50,000.

Ont., Sandhurst—AIRPORT—Dominion Government, Ottawa, Ont., additional airport development, clearing, grading, draining, runways, fencing. $106,000. Dpt. Transport, Ottawa, engrs.

Ont., Taylor (Gananogue P. O.) — AERODROME—Dominion Government, Ottawa, aerodrome development, clearing, grading, draining, fencing, hard surfaced runways. $50,000. Dpt. Transport, Ottawa, engrs.

Ont., Toronto—OIL STORAGE DEPOT—McColl-Frontenac Oil Refining Co., Ltd., Notre Dame St. E., Montreal, Que., bulk oil storage depot, Cherry St. $50,000.

P. E. I., Wellington—AIRPORT—Dominion Government, Ottawa, Ont., additional airport development, clearing, grading, draining, runways, fencing. $86,500. Dpt. Transport, Ottawa, Ont., engrs.

Que., Anticosti — AERODROME — Dominion Government, Ottawa, Ont., aerodrome development and necessary structures. $150,000. Dpt. Air Defence, Ottawa, Ont., archts. Dpt. Munitions & Supplies, Ottawa, Ont., engrs.

Que., Cap de la Madeleine—AERODROME—Secretary Dpt. Munitions & Supplies, Ottawa, Ont., bids soon, aerodrome work, clearing, grading, smoothing, draining, fencing school buildings for Service Flying Training School, for Dpt. Transport & National Defence for Air, Ottawa, Ont. $225,000. G. L. McGee and W/C R. R. Collar, c/o owner, engrs. CD 6/12.

Que., Gaspe—AIRPORT—Dominion Government, Ottawa, Ont., airport development, clearing, grading, draining, fencing, runways. $60,000. Dpt. Transport, Ottawa, Ont., engrs.

Que., Mont Joli—AIRPORT—Dominion Government, Ottawa, Ont., airport development, clearing, grading, draining, fencing. $50,000. Dpt. Transport, Ottawa, Ont., engrs.

Que., Quebec City—AIRPORT DEVELOPMENT—Dominion Government, Ottawa, Ont., additional airport development work at airport. $63,385. Dpt. Transport, Ottawa, Ont., engr.

Que., Three Rivers—AERODROME — Secretary Dpt. Munitions & Supplies, Ottawa, Ont., bids soon, aerodrome development, grading, smoothing, draining, temporary school buildings for Service Flying Training School, for Dpt. Transport & National Defence for Air, Ottawa, Ont. $95,000. G. L. McGee and W/C R. R. Collar, c/o owner, engr.

Que., Windsor—AIRPORT, etc.—Windsor Mills Flying Training School Ltd., c/o A. S. Dawes, pres., Windsor, airport and flying school. $50,000.

Sask., Moose Jaw — AIRPORT — Prairie Flying Schools, Ltd., R. W. Ryan, mgr., airport in connection with British Commonwealth Air Training School. $75,000. Ministry for Air Defence, Ottawa, Ont., engrs.

BIDS ASKED

Bids Asked July 1

N. Y., New York—PARK DEVELOPMENT—Comr. Parks, Office Dpt. Parks, Arsenal Bldg., Central Park, 5 Ave. and 64 St., general park development, East River Park, from Grand to Montgomery Sts., Contr. M-144-240.

Bids Asked July 2

N. Y., Brooklyn—DEMOLITION—Triborough Bridge Auth., Administration Bldg., Randall's Island, New York, demolition from Henry St. to 19 St. for the Elevated Hy., Contr. B-7, Madigan-Hyland, 28-04 41 Ave., Long Island City, consult. engrs.

Bids Asked July 3

†Pa., Phila.—HYDRAULIC LIQUID FUEL DISTRIBUTING SYSTEM, etc. — Yards & Docks, Navy Yard, hydraulic liquid fuel distr. sys., piping, valves, etc., Phila. Navy Yard, Spec. 9716.

Bids Asked July 5

†Fla., Tampa—RUNWAYS—Con. Q. M., MacDill Field, Tampa, concrete runways, MacDill Field.

Neb., Hastings—CONDUCTOR, etc.—Central Nebraska Pub. Power & Irrigation Dist., D. W. Kingsley, pres., at office R. O. Canaday, secy., 3 St. and St. Joseph Ave., furnishing, erecting copperweld conductor, Groups 133 and 133A; copperweld copper line, etc., Group 134; structures as for (Group 134), Group 134A; poles for copperweld-copper conductor supply canal telephone line, etc., Group 135, etc.

Bids Asked July 8

Iowa—RURAL ELECTRIC LINES—Wright County Rural Electric Co-operative, G. Kirstein, mgr., Clarion, rural electric transmission lines, Wright, Webster and Hamilton Counties. $25,000.

Bids Asked July 9

†Ill., Chanute Field (Rantoul) — PAVED APRONS, etc.—Office Con. Q. M., Chanute Field, Rantoul, paved aprons and drainage; adv. ENR 6/27.

Bids Asked July 11

Ill., Chicago—PUMPING STATION, etc.—At office P. Harrington, comr. Subways & Superhighways, 20 N. Wacker Dr., constructing pumping station, ventilating shaft, etc. Dearborn St. Subway, Contr. D-6 A; adv. 6/27.

Ill., Chicago—SUBWAY STATION—Office P. Harrington, comr. Subways & Superhighways, 20 N. Wacker Dr., constructing mezza-

Unclassified (Continued)

nine station, pump stations, etc. State St. Subway, Contr. S-9B; adv. 6/27. Bids 6/20 rejected. CD 6/4—ENR 6/6.

†Ill., Savanna—RAILROAD TRACK—Con. Q. M., Savanna Ordnance Depot, Proving Ground, standard gage railroad track; adv. ENR 6/27.

Mass., Boston—BOAT HOUSE—Commonwealth of Massachusetts, Metropolitan Dist. Comn., Parks Div., W. E. Whittaker, secy., 20 Somerset St., Boston, 1 story, 74x46 ft. and 32x24 ft., solid brick boat house, Charles River, near Longfellow Bridge. $60,000. B. R. Davis, ch. engr.

Bids Asked July 16

†Utah, Ogden — ELECTRIC DISTRIBUTION, etc.—At office Con. Q.M., Hill Field, electric distribution and street lighting sys., substation, switching station and transformer vaults, Hill Field, Spec. 1625 E; adv. ENR 6/27.

Bids Asked

California—PIPELINE—Calaveras Cement Co., 315 Montgomery St., San Francisco, trenching, backfilling, laying 63 mi. 8 in. 10 ga. steel sheet pipeline, 10 River crossings between gas fields at Rio Vista and company's plant at San Andreas.

†Mass., Squantum (br. Boston)—NAVAL AIR BASE PIPING, etc.—Yards & Docks, ch. engr., Wash., D. C. Naval Air Base, interior and underground piping and galley equip., plumbing equip service connections, etc. Spec. 1914.

★Fla., Tampa — HANGARS — Con. Q.M., MacDill Field, 274x338 ft. hangar and two 274x279 ft. hangars, steel, concrete. $1,200,000. CD 5/16—ENR 5/23.

LOW BIDDERS

Calif., Moffett Field—FUELING SYSTEM—Con. Q. M., Moffett Field, June 20, A.C. gasoline fueling sys. addns. Moffett Field, from Central Calif. Constr. Co., 115 Burrows St., San Francisco, $60,651.

N. Y., Brooklyn—FIRE ALARM SYSTEM—Fire Commissioner, Municipal Bldg., New York, June 20, constructing portion underground fire alarm sys., from Henry Ihle, Inc., 220 Bway., New York, $27,620. CD 6/11—ENR 6/13.

★N. Y., North Beach — HANGAR — Comr. Docks, Pier A, foot of Battery Pl., North River, New York, June 18, general contract Contr. 2286, land plane hangar LPH-8, La Guardia Field, from James Stewart & Co., 230 Park Ave., New York, $516,480***plumbing, from E. O. Rosenthal, 76 Norman Ave., Brooklyn, $60,000***heating, from D. J. Rice, 41-50 38 St., Long Island City, $97,387*** electrical work, from Plymouth Electric Co., 21 E. 40 St., New York, $71,925. CD 6/10—ENR 6/13.

Pennsylvania—ROADSIDE DELINEATORS, etc.—Pennsylvania Turnpike Comn., P. B. Noftsker, secy.-treas., 11 N.4 St., Harrisburg, June 21, furnishing, erecting roadside delineators, structure markers, tunnel roadway mushrooms, for erection from Western Terminal to Eastern Terminal, Penna. Turnpike, for 160 mi. from Western Cataphote Corp., 958 Wall St., Toledo, O., $65,760.

†S. C., Parris Island—LEAN-TO HANGAR ADDITION—Yards & Docks, Marine Barracks, Parris Island, June 13, lean-to and oil house exten., Spec. 9765, from Southeastern Constr. Co., 218 W. 2 St., Charlotte, N. Y., $18,900. CD 5/23—ENR 5/30.

CONTRACTS AWARDED

★†Calif., Alameda — HANGARS — P. Wks. Officer, Naval Air Station, Alameda, 4 land plane hangars, Spec. 9185, Robert E. McKee, 4700 San Fernando Rd. W., Los Angeles. $1,149,000. Est. $900,000. Bids 6/19. CD 5/22—ENR 5/30.

†Calif., Hamilton Field—GASOLINE FUELING SYSTEM—Con. Q.M., Fort Mason, June 15, A.C. gasoline fueling sys., Hamilton Field, Inv. W-6616-40-91, from Flotation Systems, Inc., 4031 Goodwin Ave., Los Angeles. $125,623.

Calif., Long Beach—RAILROAD—City Port Manager, laying 7,423 lin. ft. railroad track, crossovers, turnouts from point near Pico Ave. and Seaside Blvd. to south end Channel Way to Warren Southwest, Inc., 2145 E.25 St., Los Angeles, $34,122. Bids 6/18. CD 6/12.

Conn., New Britain—PARKING PAVILION—P. Wks. Dpt., 3-ramp, rein.-con. parking pavilion, Washington St. WPA. Over $50,000. Haller Eng. Assoc., Inc., 410 Asylum St., Hartford, engrs. CD 5/2—ENR 5/9.

Fla., Jacksonville—AIRPORT ADMINISTRATION BUILDING—Eng. Dpt. airport administration building. Owner builds. $110,000

†Fla., Jacksonville—STEAM DISTRIBUTION SYSTEM—Yards & Docks, P. Wks. Office, Naval Air Station, steam distr. sys., Spec. 9790, to Industrial Heating & Plumbing Co., 103 S.4 St., St. Joseph, Mo., $193,863. Bids 6/12, awarded 6/16.

★Ga., Chamblee—AIRPORT—Camp Gordon, Civilian Aeronautics Auth., c/o S. Candler, Decatur, airport, 3 concrete runways, 50 acres clearing, WPA, $750,000.

Ill., Wilmette—SWIMMING POOL — Westmoreland Country Club, 2600 Glenview Rd., 35x75 ft., rein.-con., tile swimming pool, to Freevol Smedburg & Co., 5950 W. Erie St., Chicago, $35,500. Total est. $60,000. Mayo & Mayo, 53 W. Jackson Blvd., Chicago, archts. CD 5/21—ENR 5/23.

Ind., East Chicago—SWIMMING POOL, etc.—Swimming pool and community building, to John F. Rahn, 500 W. 150 St. Est. $50,000. Bids 5/29. CD 5/23.

Ia., Des Moines—FAIR GROUNDS—Iowa State Fair Bd., Des Moines, imprv. State Fair Grounds. WPA. $50,000.

Mass., Raynham — DOG RACING TRACK, etc. — Massasoit Greyhound Assoc., Inc., 25 Huntington Ave., Boston, dog race track, club house, steel grandstand, etc., Herrick Farm, to A. N. Olive, 89 Broad St., Boston. Over $150,000. CD 6/11—ENR 6/13. Awarded 6/18.

Miss., Meridian—GAS PIPE LINE—Peoples Water & Gas Co., c/o W. T. Ivey, Meridian, 19,000 ft. 6 in. high pressure welded steel pipe line to serve Key Field Airport and Flintkote plant, also 2,500 ft. 4 in. pipe line to new housing project, day labor. $120,000. CD 6/11—ENR 6/13.

Mont., Great Falls — AIRPORT — F. E. Fiahery, airport comn., airport grading 72.5 acres, and surfacing 2,700 ft. runways, to Nilson-Smith Constr. Co., 214-15 St., $26,239. CD 6/5—ENR 6/13.

†New Mexico-Texas—TRANSMISSION LINE—Bureau Reclamation, Custom House, Denver, Colo., erecting 115 kilovolt transmission line from Elephant Butte Dam to Las Cruces, Rio Grand Project, to Vancott Co., 5024 W. Washington Bl., Los Angeles, Calif., $31,318. Bids 5/29. CD 5/14—ENR 5/16.

N. Y., Alfred—ATHLETIC FIELD—State Dpt. Educ., Education Bldg., Albany, athletic fields and tennis courts, drains, walks, etc., at State School of Agriculture. WPA. Over $50,000. C. W. Post, Old P. O. Bldg., Albany, ch. engr. WPA projects. CD 5/29—ENR 6/13.

N. Y., Elmira—TROLLEY TRACK REMOVA—Removing 15 mi. trolley track, backfilling with concrete, WPA. $79,277.

N. Y., Ogdensburg—AIRPORT IMPROVEMENTS—Airport imprvs., grading, etc. WPA. Over $100,000. C. W. Post, Old P. O. Bldg., Albany, ch. engr. WPA projects. CD 9/14—ENR 9/28.

Pa., Canonsburg—DAM, etc.—Lake Sonoma Park, Inc. (Real Estate Development), N. D. Patterson, secy., 512 Magee Bldg., Pittsburgh, grading, constructing dam 30 ft. high, creating 30 acre lake, 15 ft. roadway across dam, near here, to Hardy & Rankin Co., 40 Murdoch St. Est. $60,000. B. H. Aires, Malony Bldg., Pittsburgh, engr.

Pa., Corry—LANDSCAPING, etc.—G. B. Porter, city clk., imprv. city park, landscaping, bend shell, own forces. $25,000. CD 5/28—ENR 6/13. N. R. Dickson, city engr.

Pa., Laurelton—LANDSCAPING, etc.—General State Auth., Harrisburg, landscaping, grading, seeding, roadways at hospital, Laurelton State Village. WPA. $48,400. CD 5/29—ENR 6/13.

†Pa., Phila.—SHIPWAY—Yards & Docks, Navy Yard, imprv. exten. Shipways 3, to Day & Zimmermann, Inc., Packard Bldg., $197,500. Bids 5/15, awarded 6/12.

Tex., Brownsville—AIRPORT FACILITIES—Gulf Coast Aero Club c/o B. Ezell, San Benito, airport field and airport facilities, day labor and sub-contracts. $60,000. CD 6/20.

Tex., Galveston—RAIL REMOVAL—A. Stewart, comr. Streets & P. Wks., removing street car rails throughout city, concreting and paving all holes and gutters, caused by rail removal, asphalting entire area, curbing, guttering, etc., day labor. $80,000.

Tex., Longview—GAS DISTRIBUTING SYSTEM—Southern Gas Corp., c/o R. Lacy, Longview, complete pipe line distr. sys. for natural gas, booster station, etc., $175,000; 27 mi. 16 in. natural gas pipe line from gas field, vicinity city limits, $110,000. Owner builds.

†Wyo., Laramie — SUBSTATION — Bureau Reclamation, Casper, step-down 7,500 kv. ampere substation for Kendrick Project power sys., 1 mi. north of here, on transmission line from Seminoe power plant to Cheyenne, to Collier Electric & Radio Co., Denver, Colo. $64,275. Bids 4/4, awarded 6/15.

B. C., Vancouver—AIRPORT—Dpt. National Defence, Ottawa, Ont., hangar and 6 buildings at Civic Airport, to Northern Constr. Co. and J. W. Stewart, Ltd., 736 Granville St. Over $80,000. CD 3/6—ENR 3/21.

N. B., Chatham—AIRPORT—Dpt. Transport, Ottawa, Ont., ground development of airport, clearing, grading, smoothing, etc., to Armstrong Bros., Perth. Est. $50,000. G. L. McGee, c/o owner, engr. CD 6/4—ENR 6/6.

Ont., St. Catharines—AIRPORT DEVELOPMENT—Dpt. Transport, Ottawa, grading, underdraining 200 acres for airport development for Elementary Flying Training School, to Ontario Constr. Co., Ltd., 31 Queen St. $145,000. G. L. McGee, c/o owner, engr. CD 6/12.

P. E. I., Charlottetown—AERODROME DEVELOPMENT—Dominion Government, Ottawa, Ont., aerodrome development, grading, clearing, draining, fencing, runways, to Storms Contg. Co., Ltd., 49 Givens St., Toronto. $250,000. Dpt. Transport, Ottawa, Ont., engrs.

★P. E. I., Summerside—AERODROME—Dpt. National Defence for Air, Ottawa, Ont., ground work and development at St. Eleanors aerodrome, near here, to Curran & Briggs, Ltd., 203 Manning Chambers, Toronto, Ont., and Municipal Road Spraying & Oiling Co., Ltd., 225 Sterling Rd., Toronto, Ont. $241,000. Total est. $750,000. CD 11/21—ENR 12/7.

P. E. I., Wellington—RELIEF LANDING FIELD—Dpt. National Defence for Air, Ottawa, Ont., relief landing field, clearing, grading, smoothing, draining, one hard surfaced runway, to Morrison & McRae, Summerside. $86,500. Est. $100,000.

Que., Montreal—WIRELESS STATION—Dominion Government, Ottawa, Ont., wireless station, Queen Mary Rd., grading, to Kendall Bros., Inc., 1625 Iberville St.; building, to Dansereau Ltd., 1387 Bernard St. $43,900. Total est. $70,000. Dpt. National Defence, Ottawa, Ont., archts. Dpt. Munition & Supply, Ottawa, engrs.

Que., Montreal East—EQUIPMENT DEPOT—Dominion Government, Ottawa, Ont., Equip. Depot 12 for Royal Canadian Air Force, to Duranceau & Duranceau, 5847 Hamilton St., Montreal, $200,000. Dpt. Munition & Supply, Ottawa, Ont., engrs.

Sask., Moose Jaw—AIRPORT IMPRVTS—Dpt. Transport, Ottawa, Ont., additional airport imprvs., grading, stabilizing, hard-surfacing runways, to Bird Constr. Co. Ltd., Regina, $340,000. G. L. McGee, c/o owner, engr. CD 6/5—ENR 6/13.

Sask., Quill Lake—AERODROME DEVELOPMENT — Dominion Government, Ottawa, Ont., aerodrome development, clearing, grading, draining, fencing, etc., to Dawson Wade & Co. Ltd., 725 Clarke St., Vancouver, B. C. Est. $50,000.

Sask., Saskatoon—AIRPORT BUILDINGS—Dpt. National Defence for Air., Ottawa, Ont., 28 temporary buildings at airport, to Smith Bros., & Wilson, 204 Glengarry Blk., about $250,000.

LATIN AMERICA

South America, Brazil—American Consulate reports a 29 story luxury hotel at **Sao Paulo** is projected for construction by the Cia. dos Grandes Hoteis de Sao Paulo, which is said to be result of the Sao Paulo Municipal decree of Oct. 6, 1939, which offered inducements for such hotels by exempting property tax for 5 years or giving 50% reduction in property taxes during ten years***American Embassy, Rio de Janeiro, reports a $150,000 building to house State Finance Dpt. is contemplated by State Administration in **Sao Salvador, Bahir*****Federal Government of Brazil has contracted with Construccoss Aernauticas, S. A., for construction, equipping, operating factory to produce land and sea planes at **Lagoa Santa,** State of **Minas Geras.**

South America, Peru—American Commercial Attache, Lima, reports Compania de Petroleo Ganso Azul, Edificio Ridalgo, 203 Lima, plans constructing 1,000 bbl. per day petroleum refinery for production gasoline, kerosene, diesel and fuel oil, with canning and boxing plant for gasoline and kerosene, machinery for this plant has been assembled in New York for shipment to Agua Caliente.

South America, Uruguay — American Commercial Attache, Montevideo, reports program of public works in Uruguay during 1940 and 1941 has recently been sent to the Legislature. Total value 15,750,000 pesos.

PUBLIC BUILDINGS

PROPOSED WORK

★Ala., Montgomery — Montgomery Housing Auth., C. T. Rogers, chn., 528 Bell St., 424 unit housing development, serving Maxwell Field (Army Air Base). $1,305,000 USHA loan allotted.

Ark., Little Rock—City, c/o mayor, plans by Erhart & Eichenbaum, 113½ W. 3 St., Little Rock, armory. $150,000.

†Calif., San Diego—Naval Operating Base, Eleventh Naval Dist., foot of Bway., emergency barracks and subsistence facilities at Naval Operating Base Training Station, Spec. 9961.

★Fla., Miami—Central public library. $500,000.

†Fla., Opa Locka—Navy Dpt., Naval Air Base, Opa Locka, warehouse and storage tanks at air base. $200,000.

★Fla., Pensacola—Pensacola Housing Auth., Pensacola, 200 unit housing development, serving Corry Field (Naval Air Station). $643,000 USHA loan allotted.

Ia., Algona—Bids end of month cooling tower and switch gear for power plant. Total est. $250,000. Burns & McDonnell, 107 W. Linwood Ave., Kansas City, Mo., engrs. CD 5/21—ENR 5/23.

Public Buildings (Continued)

†**Ia., Burlington** — Treas. Dpt., at office Superv. Archt., Wash., D. C., bids soon, post office. $300,000. CD 11/21/38.

Ia., Denison—Defeated bonds, municipal hospital. $150,000. CD 4/17—ENR 4/25.

★†**Mass., Boston**—Yards & Docks, P. Wks. Office, Navy Yard, two 2 story, brick, steel storage buildings, concrete fdns., $140,000; power plant and distr. sys. imprvs., $385,000.

Mich., Jackson—State, 119th Field Artillery, plans by Frost & Snyder, Jackson, converting former prison site into brick, steel, concrete armory. $440,000. WPA.

Mont., Billings — Billings Housing Auth., sketches by C. C. Cohagen, Billings, housing project. $300,000.

Mont., Columbia Falls — Bd. Educ., plans nearing completion by H. E. Kirkemo, Gibson Bldg., Missoula, bids early in July, school. $185,000. CD 3/6.

Neb., Lincoln—University of Nebraska, Lincoln, 152x240 ft., brick field house for athletic activities. $300,000. Will apply to WPA.

★†**N. Y., Watervliet**—War Dpt., Wash., D. C., expansion, re-equipment arsenal. $1,750,000.

Okla., Enid — State Bd. Affairs, Capitol, Oklahoma City, final plans made by Bleumenauer & Co., Enid, 2 story, bsmnt., ward building at Northern Oklahoma State Hospital. $150,000.

Okla., Norman—State Bd. Affairs, Capitol, Oklahoma City, final plans made by J. Smay, Norman, 2 story, bsmnt. ward building at State Insane Hospital. $160,000. CD 6/16/39—ENR 6/29/39.

Pa., Pleasantville—Consolidated School Dist. (to be formed), c/o Pleasantville School Bd., C. C. Hogg, pres., plans by W. H. Crosby, Oil City, 2 story, bsmnt., brick, steel consolidated high school. $150,000. Bond election July 23 for same. Plans by same architect, rebuilding portion school destroyed by fire. $45,000.

★**Pa., Scranton**—Scranton Housing Auth., J. W. Crolly, counsel, H. D. Case, secy., Lincoln Trust Bldg., bids in August or September, housing project. $1,225,000. USHA. Davis & Lewis, Scranton Electric Bldg., E. Rutledge, 148 Adams Ave., and V. Russoniello, 417 N. 9 Ave., archts. CD 1/12—ENR 1/18.

★**Tenn., Knoxville**—Tennessee Valley Auth., Knoxville, constructing 120,000 kw. steam power plant; and adding generating units to increase output of Wilson and Pickwick Dams. $30,000,000.

Tex., Corpus Christi—Bd. Educ., c/o W. B. Ray, pres., voted bonds Ward School building, completing stadium at high school, $250,000; also junior college, $200,000. CD 5/31.

†**Tex., Dallas**—U. S. Army Air Corps Bureau, c/o Aviation School, Dallas (Wash., D. C., headquarters), establishing base unit for housing and training new army corps pilots, Love Field between Dallas and Dalworth. $200,000.

★**Tex., Galveston**—Galveston Housing Auth., c/o B. Harris, mayor, low cost housing projects, 75 unit Latin-American unit, $283,500; 350 family unit, White American unit, $1,265,000; 450 family unit, Negro unit, $1,755,000.

†**Tex., Raymondville**—Farm Security Administration, c/o Administration Bldg., State Fair Grounds, Dallas, constructing, equipping co-op. compress and feed mill. $40,000.

★†**Wash., Bremerton** — Puget Sound Navy Yard, Bremerton, storage, structural assembly and transportation buildings. $680,000.

†**Wash., Keyport**—Puget Sound Navy Yard, Bremerton, overhaul shop and other buildings. $175,000.

Wis., Waupaca—Wisconsin Adjutant General Dpt., R. C. Kirchhoff, state archt., Madison, 1 story, 60x102 ft. power house, rein.-con., near here. $119,000 incl. equip.

★†**Wyo., Fort Warren**—Con. Q.M., barracks, non-commissioned officers' quarters, fire station, laundry and bakery addns., quartermaster's utility shop, warehouse and fencing. $800,000.

Man., Winnipeg—Secretary Dpt. Munitions & Supplies, Ottawa, Ont., bids soon, aircraft factory. $400,000. W/C R. R. Coolar, c/o owner, engr.

N. B., Moncton—Dominion Government, Ottawa, Ont., plans by Dpt. Transport, Ottawa, Ont., barracks. $200,000.

Ont., Fort Erie—Dominion Government, Ottawa, aircraft assembly plant, Gilmour Rd. $150,000. Dpt. National Defence, Ottawa, archts. Dpt. Munitions & Supplies, Ottawa, engrs.

★**Ont., Kingston**—Dominion Government, Ottawa, various sized buildings for Service Flying Training School. $750,000 appropriated. Dpt. Air Defence, Ottawa, archts. Dpt. Munitions & Supplies, Ottawa, engrs.

Ont., St. Catharines—Secretary Dpt. Munitions & Supplies, Ottawa, bids soon, elementary flying training school at airport., About $145,000. G. I. McGee, c/o owner, engr.

★**P. E. I., Charlottetown**—Dominion Government, Ottawa, Ont., bombing and gunnery school. $550,000. Dpt. National Defence, Ottawa, Ont., archts. Dpt. Munitions & Supplies, Ottawa, engrs.

P. E. I., St. Louis—Provincial Government, Charlottetown, 3 story, bsmnt., steel milling plant, concrete fdn. $40,000. Dpt. P. Wks., Charlottetown, engrs.

Que., St. Hubert — Dominion Government, Ottawa, Ont., air observation school. $250,000. Dpt. National Defence, Ottawa, Ont., archts. Dpt. Munitions & Supplies, Ottawa, Ont., engrs.

†**Alaska, Fairbanks**—Con. Q.M., Alaskan Air Base, San Francisco, Calif., cancelled bids to have been opened June 11, plumbing, heating, wiring, ventilating, sheet metal work, refrigerating sys., sewage disposal sys., mechanical equip. for power plant and other buildings, Ladd Field. CD 5/21—ENR 5/23.

BIDS ASKED

Bids Asked July 1

N. H., Concord—State, S. B. Story, comptroller, State House, central heating plant, boiler, stokers, turbo-generators, switchboards, etc. Over $40,000.

Bids Asked July 2

Ill., Winnetka—S. Winslow, village clk., permanent railroad stations in connection with extensive grade separation project. C. De Leuw, 20 N. Wacker Dr., Chicago, engr.

Bids Asked July 3

Me., Sanford—W. H. Marland, chn. Town Building Comn., 6 Washington St., 2 story, ground floor, brick, stone high school, concrete fdn. $250,000. Frank Irving Cooper Corp., 20 Kilby St., Boston, Mass., archt. CD 5/28—ENR 6/6.

Bids Asked July 8

N. Y., Deer Park—Bd. Trustees Common School Dist. 7, Deer Park, Babylon, Suffolk Co., Josephine Trabona, clk.., altering, constructing school addn., Deer Park. H. H. Avolin, Wyandanch, archt.; adv. ENR 6/27.

Bids Asked About July 8

Wis., Marshfield — Marshfield Electric & Water Dpt., 1 story, 40x100 ft., brick, steel turbine building, concrete fdn. Helmick, Edeskuty & Lutz, 412 Essex Bldg., Minneapolis, Minn., engrs.

Bids Asked July 9

†**Ill., Savanna**—Con. Q. M., Savanna Ordnance Depot, Proving Ground, 63 and 85 underground magazines; adv. ENR 6/27.

Bids Asked July 10

†**Ill., Savanna**—Con. Q. M., Savanna Ordnance Depot, Proving Ground, 44 standard ammunition magazines; adv. ENR 6/27.

Mass., Wrentham—Commonwealth of Massachusetts, Dpt. Mental Health, 100 Nashua St., Boston, boiler house, furnishing, installing coal handling machinery, pulverizing machinery, oil burner sys., at State School. Total est. $63,500.

N. C., Fayetteville—H. C. Blackwell, mayor, constructing municipal building (city hall). $150,000. G. F. Laslett, Fayetteville, archt. CD 4/16—ENR 4/18.

†**Pa., Phila.**—P. Wks. Office, Navy Yard, heating, electrical work, exterior underground service lines, etc., at material assembly shop, Navy Yard, Spec. 9582.

†**Pa., Phila.**—P. Wks. Office, Navy Yard, freight elevator, assembly shop, Navy Yard, Spec. 9583.

Bids Asked July 12

†**Ala., Mobile**—Con. Q.M., S.E. Air Base, 8 brick, rein.-con., structural steel buildings at air base. $278,000.

Bids Asked July 15

★**Ariz., Phoenix** — Phoenix Housing Auth., Professional Bldg., Frank Luke, Jr., Homes, 150 units, Ariz. 1-2. $507,000. USHA loan. Lescher & Mahoney, Title & Trust Bldg., archts. CD 6/11—ENR 6/13.

★**N. J., Newark**—Newark Housing Auth., City Hall, Felix Field Court, 9 brick apartments, 300 units, Livingston St. $1,796,000. Extended date. Bd. Design, 60 Park Pl., archts. CD 6/18—ENR 6/20.

O., Sycamore—Bd. Educ., brick institutional building. Over $150,000. Walker, Norwick & Templin, Amer. Bldg., Dayton, archts. CD 4/25—ENR 5/2.

Bids About July 15

Ind., Fort Wayne — Fort Wayne Housing Auth., W. R. E. Hall, chn., S. Clinton St., housing project, 120 dwelling units, Taylor St. and Rockhill Park. $300,000. A. M. Strauss, 415 Cal-Wayne Bldg., archt. CD 2/28—ENR 3/14.

Bids Asked July 16

†**Colo., Denver**—Con. Q.M., Lowry Field, constructing communications building adv. ENR 6/27.

Miss., Hernando—De Soto Co. Bd. Supervs., c/o W. H. McCargo, Olive Branch, 2 story, bsmnt., brick court house. $185,000. R. W. Naef, Jackson, archt. CD 3/29—ENR 4/11.

†**Tex., Galveston**—U. S. Eng., Galveston, office building, warehouse, garage and bulkhead, Port Lavaca.

★**P. R., Mayaguez**—Mayaguez Housing Auth., City Hall, F. R. Colon, 476 units, Columbus Landing housing project. $877,000. USHA. CD 2/2—ENR 2/8.

Bids Asked July 17

†**Arizona-California** and **Nevada** — Bureau Reclamation, Dpt. Interior, Wash., D. C., furnishing, del. hydraulic turbine, governor, pressure regulator, Spec. 917, for Unit A-5, Boulder power plant, Boulder Canyon. J. C. Page, comr.

†**Calif., Mare Island**—P. Wks. Office, Mare Island Navy Yard, Mare Island, furnishing, installing concrete machine foundations, electric manholes, duct holes, conduit, electrical work, etc., machine shop building 689, Mare Island Navy Yard, Spec. 9821.

†**Fla., Pensacola**—P. Wks. Officer, Naval Air Sta., Federal Bldg., general contract motor test stand building, underground gasoline storage tank and piping.

La., New Orleans — New Orleans Housing Auth., 36 housing units, La. 1-1, Pt. 2. CD 1/30—ENR 2/1.

★**N. Y., Brooklyn**—New York City Housing Auth., G. Swope, chn., 122 E. 42 St., New York, Kingsboro Homes (formerly Bedford-Stuyvesant), 1,166 unit housing project. $7,131,000. Tentative date. Skidmore & Owings, 5 E. 57 St., New York, archts.' USHA loan.

Bids Asked July 18

†**Arizona** and **California**—Bureau Reclamation, Wash., D. C., J. C. Page, comr., furnishing, del. condensers, oil circuit breakers, etc., for Phoenix Terminal substation, Parker Dam power project, Spec. 916.

†**Tex., San Antonio**—Con. Q.M., San Antonio, Tex., and vicinity, Fort Sam Houston, engine test building and spray pool (superstructure), Duncan Field; adv. ENR 6/27.

P. R., Bayamon—Bayamon Housing Auth., 133 unit Dr. St. Augustin Stahl Homes, P. R. 3-5. $251,000. USHA.

Bids Asked July 23

†**Fla., Tampa** — Office Con. Q.M., MacDill Field, 5 single field officers' quarters, MacDill Field; adv. ENR 6/27.

†**Mo., Kansas City**—P. Bldgs. Administration, Wash., D. C., remodeling post office; adv. ENR 6/27.

Bids Asked July 24

†**Nev., Winnemucca**—Public Buildings Administration, Wash., D. C., W. E. Reynolds, comr., remodeling post office; adv. ENR 6/27.

Bids Asked July 25

N. Y., Green Haven—Comr. Correction, State Office Bldg., Albany, laundry and bath building, Building 11, and Building 12 for school, maintenance shop and garage purposes, tunnels, Green Haven Prison. $450,000. Extended date. W. Haugaard, comr. architecture, and T. F. Farrell, ch. engr., both State Office Bldg., Albany. CD 6/18—ENR 6/20.

R. I., Pawtucket—Housing Auth., City Hall, W. L. Connolly, chn., 226 dwelling units, comprising 25 buildings, Project R.I. 2-1; adv. ENR 6/27. CD 6/24—ENR 4/4.

Bids Asked July 26

Tex., Pelly—Pelly Housing Auth., S. L. Morris, exec.-secy., City Hall, thirty 1 story dwelling units, No. 1 for white tenants, $116,500; thirty 1 story dwelling units, No. 2 other than whites, $116,500. USHA. Extended date. Hedrick & Lindsley, Nixon Bldg., Corpus Christi, and Sterling Bldg., Houston, archts. CD 6/18—ENR 6/20.

Bids Asked July 30

Mich., Detroit — Detroit Housing Auth., G. Edwards, dir.-secy., Water Bd. Bldg., S. James Herman Gardens Housing Project; adv. ENR 6/27. CD 5/9—ENR 5/16.

Bids Asked August 8

N. Y., Ossining—State Dpt. Correction, State Office Bldg., Albany, reconstructing cell block sect. and reinforcing fdn. for Cell Block "B" at Sing Sing Prison. $150,000. W. Haugaard, comr. Architecture, and T. F. Farrell, ch. engr., both State Bldg., Albany. CD 1/26—ENR 2/1.

Bids Asked August 14

★**N. Y., St. George**—State Dpt. Mental Hygiene, Albany, 10 buildings at State School for Mental Defectives, Able Bodied Patients Buildings 5, 6, 7, 8, 9, 19, 20, 21, 22 and 23, at Willowbrook, near here. $2,000,000. W. Haugaard, comr. Architecture, and T. F Farrell, ch. engr., both State Office Bldg. Albany.

Bids Asked

†**N. H., Portsmouth**—Yards & Docks, Navy Yard, Wash., D. C., brick, steel machine shop, Navy Yard, Spec. 9931. $185,000.

Ont., Brantford—L. Thomson, c/o Dpt. Munitions & Supply, Ottawa, various frame buildings, concrete fdns., in connection with British Commonwealth Air Training School. $250,000. Dpt. National Defence, Ottawa, archts.

LOW BIDDERS

†**Calif., Alcatraz**—Pub. Bldgs. Administration, Wash., D. C., June 18, addns. for hospital and cell block D at U. S. Penitentiary, Alcatraz Island, in San Francisco, from Clinton Constr. Co., 923 Folsom St., San Francisco. **(1) $188,000 (2) $121,000.**

★**Calif., Berkeley**—Regents of University of California, June 20, 4 story, bsmnt., rein.-con. administration building, from K. E. Parker, 135 South Park, San Francisco. $657,450. CD 6/7—ENR 4/25.

Public Buildings (Continued)

D. C., Wash.—Dist. Comrs., District Bldg., June 15, Ketcham School building addns., from John W. Hunt Co., 316 Randolph Pl. N.E. $205,350. CD 6/4—ENR 6/6.

†**D. C., Wash.**—Yards & Docks, Navy Dpt., June 19, machine shop exten., Spec. 9832, from George Hyman Constr. Co., 7 St. and T St. N.E. **$322,000.** CD 6/11—ENR 6/13.

†**Ill., East St. Louis**—Pub. Buildings Administration, Wash., D. C., June 18, remodeling, air conditioning court room, judge's suite and 4th floor Federal Building, from MacDonald Constr. Co., 3829 W. Pine Blvd., St. Louis, Mo. $191,214. Est. $140,000. CD 5/23—ENR 5/30.

N. Y., Lancaster—Bd. Village Trustees, June 17, village hall, fire and police station, from C. H. Wing Co., Inc., 75 Vandalia St., Buffalo. Est. $150,000. CD 6/12.

★**Tex., Houston** — Houston Housing Auth., Stewart Bldg., June 19, general contract 333 residential units for negroes, Tex. 5-2, from R. F. Ball Constr. Co., 300 S. Main St., Fort Worth, **$684,983*****plumbing, from Charles G. Heyne & Co., 2002 Rothwell St., **$155,678***** electrical work, from Fisk Electric Co., 3104 Milam St., **$36,334.** CD 6/14—ENR 5/2.

★**Tex., San Antonio**—San Antonio Housing Auth., J. N. Fletcher, chn., Alamo Natl. Bank Bldg., June 21, Housing Project 6-4, negro project, East Side, Wheatley Courts unit, from H. H. Moeller, 1211 Willow St. $543,722. CD 6/6—ENR 6/13.

†**Wash., Fort Lewis**—Con. Q.M., Fort Lewis, June 19, addn. and alterations Station Hospital, Inv. 6105-40-21, from Macdonald Building Co., 1517 S. Tacoma Way, Tacoma. **$271,-550.** CD 5/28—ENR 6/6.

†**Wash., Vernita**—Bonneville Power Administration, P. O. Box 3537, Portland, furnishing four 16,667 kva transformers for Bonneville Power Substation, Inv. 1077, from General Electric Co., 11 River Rd., Schenectady, N. Y. **$420,640.**

★†**Canal Zone, Coco Solo**—Yards & Docks, Navy Dpt., Wash., D. C., June 19, 23 apartment buildings, 2 transformer houses at Naval Submarine Base, Spec. 9851, from McCarthy Bros. Constr. Co., 4903 Delmar St., St. Louis, Mo. **$872,684.** CD 5/20—ENR 5/23.

CONTRACTS AWARDED

Ala., Wetumpka—State, Col. W. E. Persons, prison dir., prison building, own forces. **$200,-000.** CD 4/16—ENR 4/18.

Conn., New Haven — New Haven Housing Auth., 165 Elm St., brick, steel apartments, USHA Conn. 4-1, Dixwell Ave. between Webster and Foote Sts., to Wm. L. Crow Constr. Co., 101 Park Ave., New York. Est. **$250,000.** CD 5/21—ENR 5/23.

★**Mass., Fall River**—O. La Plante, chn. Fall River Housing Auth., 41 N. Main St., USHA Project Mass. 6-2, Green, Central and Pine Sts., to M. Spinelli & Sons, 38 Chauncy St., Boston. **$722,000.** CD 6/14—ENR 6/20.

Mo., Lebanon—R. Shafer, city clk., power plant expansions and imprvs., to Westinghouse Electric & Mfg. Co., 411 N. 7 St., St. Louis. **$63,527.**

N. H., Durham—University of New Hampshire, F. Englehardt, pres., Thompson Hall, 2 story, bsmnt., 45x200 ft., brick, concrete shops, to Davison Constr. Co., 1306-A Elm St., Manchester. Est. **$50,000.** Bids 6/11. CD 6/4—ENR 6/6.

†**Pa., Philа.**—Yards & Docks, P. Wks. Office, Navy Yard, superstructure exten. Machine Shop Building 18, Spec. 9405, to R. S. Herzog, 1505 Race St., Phila. **$217,890.** Bids 6/19, awarded 6/19. CD 5/29—ENR 6/6.

N. S., Amherst—Dominion Government, Ottawa, Ont., remodeling plant for munition manufacturing, to Canadian Car & Fdry Ltd., 621 Craig St. W., Montreal, Que., **$125,000.** Dpt. Munitions, Ottawa, Ont., engrs. CD 4/18 —ENR 4/25, under Commercial Buildings.

Ont., Fort William—Canadian Car & Fdry. Co., Ltd., Fort William, concrete floors in plant on Montreal St., for Dominion Government to Claydon Co., Ltd., Graham Horne Blvd., **$50,000.**

Que., Longueuil—Dpt. Munitions & Supplies, Ottawa, Ont., factory buildings for manufacturing war supplies, to Sutherland Constr. Co. Ltd., 1440 St. Catherine St. W., Montreal, **$71,300.**

Sask., Regina—Dpt. National Defence for Air, Ottawa, Ont., elementary Flying Training School 15, to Smith Bros. & Wilson, Ltd., 104 Dominion Bank Bldg. **$300,000** plus. W/C R. R. Collar, c/o owner, engr. CD 6/11—ENR 6/13.

P. R., Fajardo—Puerto Rico Housing Auth., San Juan, F. L. Dorathy, chn., 210 unit Dr. Santiago Veve Calzada housing project, to Porto Rico Iron Wks., Inc., Ponce. **$298,240.** Bids 5/28, awarded 6/19. CD 5/16—ENR 2/22.

COMMERCIAL BUILDINGS

PROPOSED WORK

Ariz., Tucson—El Canto Apartments, Inc., Tucson, plans nearing completion by O. A. Bell, Heard Bldg., Phoenix, and probably take bids by July 1, apartment. $157,000. CD 5/10—ENR 5/23.

Fla., Fort Lauderdale—E. G. Folsum, 443 N. E. 9 Ave., residential development. Over $150,000.

Fla., Fort Lauderdale—R. H. Gore, Bontana Ave., residential construction, Bontana Island. Over $150,000.

Fla., Fort Lauderdale—L. Morgan, at site, residential development at River Highlands subdivision. $350,000.

Fla., Hobe Sound—B. J. Carlberg, Hobe Sound, farm houses and other buildings on recently acquired 5,520 tract area. Total est. over $150,000.

Fla., Miami—Owner, c/o B. Weil, 2457 Collins Ave., Miami Beach, hotel. Over $250,000.

Fla., Miami—J. M. Phillips and O. B. Simmons, Jr., 34 St. and Collins Ave., plans by Roy F. France, Inc., 1620 West Ave., Miami Beach, 14 story Hotel Versailles. $350,000. P. Nordyke, c/o owner, engr.

Fla., Miami Beach—Ben Tuchin & M. Schwingler, 1030 14 St., hotel. Over $150,000.

Fla., West Palm Beach—Smith & Yetter, 337 Worth Ave., Palm Beach, residential development, Broadmoor on Clematis St. Over $150,000.

Ga., Augusta—Manley's Department Store, c/o Scroggs & Ewing, archts., SFC Bldg., altering constructing 3 story, bsmnt., 50x160 ft. store addn., new partitions etc. About $150,000. R. S. Fiske, Healey Bldg., Atlanta, engr.

★**Ill., Chicago**—Syndicate, c/o J. W. Wood, 135 S. La Salle St., sketches by Holabird & Root, 333 N. Michigan Ave., 16 story, agricultural mart, near loop. $8,000,000-$10,000,000.

Ind., West Lafayette—Purdue University Bd. Trustees, W. B. Stewart, controller, West Lafayette, soon lets contract 3 story, bsmnt., 344x145 ft. and 1 story, 165x166 ft. brick, stone, rein.-con. steel agricultural engineering building. $150,000. W. Scholar, 1114 State St., Lafayette, archt.

La., New Orleans—Southern Bell Telephone & Telegraph Co., Hurt Bldg., Atlanta, Ga., soon lets contract superstructure 2 story, bsmnt., 94x94 ft., Jackson-Uptown dial telephone exchange building, brick, concrete, steel, St. Charles Ave. and General Pershing St. $150,000. Hentz, Adler & Schutze, and J. Warren Armistead, Jr., both 1330 Candler Bldg., Atlanta, Ga., assoc. archts. CD 6/17—ENR 6/20.

La., Shreveport—Texas & Pacific Ry. Co., E. F. Mitchell, ch. engr., Texas & Pacific Bldg., Dallas, Tex., soon lets contract passenger station, Market St. $150,000. E. E. Neild, City Bank Bldg., archt. CD 6/4—ENR 6/6.

★**N. J., Camden**—Syndicate, c/o B. Draper, 1st Natl. Bank & Trust Co., Bway. and Sycamore Sts., residential construction. Over $500,000.

★**N. J., East Paterson**—Russell Vanderbeck, 1 Morlot Ave., Fairlawn, plans by E. Coe, 26 Hamilton St., Paterson, one hundred fifty 2 story, bsmnt., 24x28 ft. frame, brick residential development, Elmwood Manor and River Dr. $750,000.

N. J., Irvington—Owner, c/o N. Siegler, archt., 951 Broad St., Newark, twenty-six 2 story, bsmnt. brick apartments, Stuyvestant Ave.

N. J., Trenton—W. Reade, 701 7 Ave., New York, representing R.K.O. Theatres Corp., 1270 6 Ave., New York, new theatre to replace Trent Theatre, also new theatre, Brunswick Ave. About $300,000.

N. C., Greensboro—Bennett College, plans by O. C. Poundstone, Palmer Bldg., Atlanta, Ga., memorial chapel. $150,000.

O., Cleveland—Arthur G. McKee & Co., T. W. Rutledge, purch. agt., 2422 Euclid Ave., soon lets contract 2 story, bsmnt., 46x40 ft. with two 42x92 ft. wings, steel, concrete office and laboratory building. $150,000. J. W. Little, 2036 E. 22 St., archt. CD 3/22—ENR 4/4.

O., Cleveland—Sandra Corp., S. S. Sanders, secy., 8001 Franklin Ave., plans by M. H. White, 750 Prospect Ave., 4 story, bsmnt., 86x130 ft. brick, steel, concrete apartment. $300,000. CD 5/22—ENR 5/30.

★**Pa., Haverford and Upper Darby**—Aronomink Corp., at site, 1,200 residences, Haverford and Upper Darby. $12,000,000.

Pa., Jenkintown—Owner, c/o W. and M. Herkness, 824 Homestead Rd., residential construction. Over $150,000.

★**Pa., Phila.**—Owner, c/o H. A. Lang, 2402 Market St., residential construction here and vicinity. Over $500,000.

Pa., Phila.—Parkwood Constr. Co., c/o A. E. Greenbaum, Fidelity Bldg., 60 semi-detached 2 story homes, Drexel Rd., between 57 and 58 Sts. $50,000.

Pa., Phila.—Mildred L. Spinney, Framingham, Mass., 2 story restaurant, City line and Haverford. $150,000.

Pa., Reading—City Bank & Trust Co., J. J. Beaver, pres., 8-12 S. 8 St., bids in July (selected list bidders), bank and office, 536-40 Penn St. $150,000. CD 6/11—ENR 6/13.

Tex., San Antonio—Sexauer Real Estate Co., c/o G. Sexauer, 406 Brady Bldg., 30 or more 1 story residences, Highland Park sect. $150,000.

Tex., Galveston—R. W. Morrison & Associates, c/o St. Anthony Hotel, Navarro St., San Antonio, remodeling, reconditioning, constructing unit to Galvez Hotel. $200,000.

Wis., Pulaski—Franciscan Fathers, Pulaski, soon lets contract monastery building, boiler and laundry rooms. L. A. Genlesse, Green Bay, archt. CD 6/11—ENR 6/13.

B. C., Vancouver—W. J. Long, Rialto Theatre, Edmonton, Alta., plans by Architect, c/o Vested Estates, Ltd., archt., 724 Nelson St., brick, steel, stone theatre, concrete fdn., Granville St. $150,000.

N. B., Memramcook—L. N. Audet, archt., 32 Wellington St. N., Sherbrooke, Que., bids soon, hospital, for Sisters of Notre Dame of Sacred Heart. $250,000.

N. B., St. Joseph de Memramcook—L. N. Audet, archt., 32 Wellington St. N., Sherbrooke, Que., soon lets contract convent for Reverend Sisters of Notre Dame of Sacred Heart, St. Joseph. $250,000. CD 4/3.

★**Ont., Port Talbot**—Youth Haven Foundation, c/o C. A. Pfeller, 1664 Penobscot Bldg., Detroit, Mich., plans by C. Dolphin, 43 Victoria St., Toronto, five 2 story, bsmnt., 26x120 ft. units, also assembly hall, recreation park, etc., on 600 acre site. $500,000.

Ont., Toronto—Mrs. A. Sutton, 21 Grosvenor St., apartment block, Grosvenor St. $300,000.

BIDS ASKED

Bids Asked July 1

Conn., Canaan—McClintock & Craig, archts., 458 Bridge St., Springfield, Mass., 2nd story 55x140 ft., brick, steel hospital addn., for Robert C. Geer Hospital, S. Canaan Rd.

Bids Asked About July 6

Mich., Detroit—Michigan Bell Telephone Co., 1365 Cass Ave., 2 story, bsmnt., brick, steel, stone, concrete exchange building, plain fdn. $160,000. Smith, Hinchman & Grylls, Marquette Bldg., archts. CD 5/3—ENR 5/16.

Bids Asked July 10

Pa., York—St. Paul's Lutheran Church, church. $150,000. H. R. Lenker, Schmidt Bldg., archt. CD 6/14—ENR 6/20.

Bids Asked July 17

N. C., Winston Salem — North Carolina Baptist Hospital, Winston Salem, and Wake Forest College, Wake Forest, Baptist Hospital addn. and Wake Forest Medical School. Tentative date. Northrup & O'Brien, Reynolds Bldg., archts. CD 1/22—ENR 1/25.

Calif., San Francisco—E. B. Bertz, archt., 681 Market St., 1 story, 100x100 ft., wood frame stores, for J. Maramont & D. M. Schultz, c/o archt.

★**D. C, Wash.**—J. Maiatico, Woodward Bldg., brick, concrete apartment hotel, 2501 "Q" St. N.W. $500,000. M. G. Lepley, 5230 Nebraska Ave. N.W., archt.

Pa., West View (br. Pittsburgh)—A. Pyzdrowski, archt., 3412 Fleetwood St., Pittsburgh, 3 story, bsmnt., brick, concrete, steel right wing high school addn., for Holy Ghost High School, Mother Rita, in charge, 5246 Clarwin St. Est. $150,000. CD 4/10—ENR 4/25.

Tex., La Marque—Gulf Housing Co., c/o R. W. E. Thompson, La Marque, seventy-six 1 and 2 story frame residences, rein.-con. beam and pier fdns. About $150,000. M. Rice, 716 Peden St., Houston, archt. CD 5/14—ENR 5/23.

CONTRACTS AWARDED

★**Calif., Los Angeles**—Palomar Sports Center, Vermont Ave. and 3 St., group buildings, to be used as sports center, sports arena, ice rink, bowling pavilion, dance pavilion, to L. D. Richardson & Co., 9437 Santa Monica Blvd., cost plus basis. Est. over **$500,000.** Former award to M. Diggs, 3440 W. 2 St., rescinded. ENR 3/7.

Calif., Oakland—Pacific Telephone & Telegraph Co., Telephone Bldg., San Francisco, 5 story, 102x102 ft., structural steel phone exchange, separate contracts; steel, to Bethlehem Steel Co., 20 and Illinois Sts., San Francisco, **$30,367.** Total est. over **$150,000.** CD 6/24—ENR 6/27.

Calif., San Francisco—Heyman Bros., 742 Market St., thirty-eight 1 and 1½ story, wood frame homes, Portola Dist., day labor. **$250,000.**

Calif., San Francisco—Standard Building Co., 1500 Judah St., wood frame homes, Lakeshore Park, day labor. Over **$150,000.**

Fla., Miami Beach—Cadillac Corp., c/o R. F. France, Inc., archt., 1620 West Ave., hotel, separate contracts. **$300,000.** CD 5/16—ENR 5/23.

La., New Orleans—Southern Bell Telephone & Telegraph Co., Hurt Bldg., Atlanta, Ga., fdn. for telephone building, to R. P. Farnsworth Co., Inc., 212 Nashville Ave., New Orleans. Total est. **$150,000.** CD 6/17—ENR 6/20.

Mich., Detroit—Demery & Co., Woodward and Milwaukee Aves., 2 story, bsmnt., 135x140 ft., brick, steel, concrete, stone store, plain fdn., to C. A. Handeyside Constr. Co., 12-233 General Motors Bldg. Est. **$250,000.**

★**Mich., Detroit**—Engineering Society of Detroit and University of Michigan, 270 Statler Hotel, 3 basic units engineering building, 65x150x404 ft., brick, steel, stone, rein.-con., plain fdn., to W. E. Wood Co., 4649 Humbolt Ave. Est. **$1,500,000.** CD 6/23/39—ENR 7/6/39.

N. J., Clifton—W. J. Harring, Inc., 1148 Bloomfield Ave., 1½ story, bsmnt., 26x30 ft. frame homes, Knollwood Terrace, separate contracts. **$200,000.** CD 6/7—ENR 6/13.

N. J., Millburn—Kling Development Co., 17 Academy St., Newark, eight 2 story, bsmnt., brick apartments, Millburn Ave., to Corniman

Commercial Buildings (Continued)

Eng. Co., 501 Main St., Orange, **$175,000.** Schmidlin & McMurray, 982 Stuyvesant Ave., Union, archts.

★**N. J., Montclair**—Rockliff Realty Corp., 580-5 Ave., New York, 7 story, bsmnt., 80x410 ft., brick, steel apartment, with 80 car garage, Crestmont Rd., to R.M.C. Constr. & Eng. Corp., 101 Park Ave., New York, **$700,000.** CD 5/6—ENR 5/9.

N. J., Plainfield—Owner, c/o contractor, five 2 story, 40x70 ft., brick apartments, E. Front St., to Cornman Eng. Co., 501 Main St., Orange, **$250,000.** L. Justement, 1626 K St., Wash., D. C., archt.

O., Cincinnati—B. L. Kilgour, Jr., Indian Hill, Cincinnati, 2 story, rein.-con., brick, residential building, concrete fdn., to Guenttner-Reinhard Co., 1816 Central Parkway. Est. **$150,000.** Harry Hake & Harry Hake, Jr., 2400 Gilbert Ave., archts.

O., Cleveland—Lakecove, Inc., c/o J. Koslen, 1727 Cumberland Rd., masonry contract 3 story, 54x110 ft. brick, steel apartment, to A. Winikur, 9303 Pierpont Ave.; carpentry, to Epstein Constr. Co., 10826 Grantwood Ave. Est. **$150,000.** M. H. White, 750 Prospect Ave., archt.

Pa., Allentown—G. H. Schnitzer, 1633 Linden St., 84x161 ft., brick, steel apartment, N. 18 St., to J. Schnitzer, c/o owner. Est. **$150,000.**

Pa., Phila.—Gethel Homes, Inc., 7909 Park Ave., Elkins Park, residential construction, Aldine St. and vicinity. Owner builds. Total est. over **$150,000.**

Pa., Phila.—Parkwood Constr. Co., c/o A. E. Greenbaum, Fidelity Bldg., 12 twin, 2 story, brick, stone houses, Wynnfield Ave., between 56 and 57 Sts. Owner builds. **$156,000.**

Pa., Phila.—J. M. Zerby, 5909 N. Broad St., 26 twin brick, stone houses, Friendship St. between Loretta and Frontenac Sts. Owner builds. **$150,000.** CD 6/12—ENR 6/20.

Tenn., Nashville—Joint University Libraries, Nashville, 6 story, bsmnt., 143x180 ft. brick, rein.-con., steel library, plain fdn., to Foster & Creighton Co., Amer. Natl. Bank Bldg., **$426,155.** Awarded 5/24. CD 2/19—ENR 2/22.

Tex., Houston—Ike Freed & Ben Cohen, West Bldg., store, to A. Meyerson, 2119 MacGregor St., **$150,000.** Bond Clothing Stores, 261-5 Ave., New York, lessee CD 5/15—ENR 5/23.

★**Tex., Houston**—Y. M. C. A., c/o G. Ulmer, pres., Louisiana and Leeland Sts., 10 story, bsmnt., 2 story, tower building, to Knutson Constr. Co., Union Natl. Bank Bldg., **$742,477.** CD 5/28—ENR 6/6.

Tex., San Antonio—Pan-American Hotel Co. (Hotel named St. Anthony), c/o P. McSween, mgr., 15 story, brick, hotel unit, Travis and Jefferson Sts., sub-contracts under supervision T. Miller, c/o St. Anthony Hotel. **$250,000.** F. S. Jones, c/o St. Anthony Hotel, Navarro St., archt. CD 3/28—ENR 4/4.

Que., Estcourt—Reverend Sisters of St. Joseph de Vallier, 96 Ste. Foye Rd., Quebec City, 3 story, 83x56 ft. rein.-con., brick convent, to Francois Jobin, Inc., 88 St. Louis Rd., Quebec City, **$150,000.** Beaule & Morrissette, 21 D' Augillon St., Quebec City, archts. Hailé & De Grave, 202 St. John St., Quebec City, engrs.

INDUSTRIAL BUILDINGS

PROPOSED WORK

Ala., Birmingham—WAREHOUSE, etc.—V. J. Elmore, 5, 10 and $1.00 Store, Inc., Clanton, plans by R. H. Levison, Clanton, 2 story, bsmnt., brick, steel warehouse and office building, Ave. A and 14 St. $70,000.

Ala., Colbert—PLANT—Electro Metallurgical Co., Niagara Falls, N. Y., soon lets contract 1 story, 76x220 ft. plant. Over $100,000. W. C. McDowell, c/o owner, engr.

Calif., Alameda—MILLS, etc.—General Eng. & Dry Dock Co., foot of 5 Ave., Oakland, mills, wharves, dock and quarters in connection with 25 acre development, in connection with ship building facilities. $400,000.

Calif., Hollywood—SOUND STAGE—Columbia Pictures Corp., 1438 Gower St., 110x159 ft. sound stage. $40,000.

Calif., Long Beach—FACTORY—Air Transport Mfg. Co., Ltd., E. L. Hollywood, pres., 307 W. 8 St., Los Angeles, plans by K. S. Wing, 501 Termino Ave., air factory, Dougherty Field, near here. $65,000.

Calif., Pittsburg—PLANT—Dow Chemical Co., 9 Main St., San Francisco, chemical plant expansions. Over $40,000.

Calif., San Francisco — WAREHOUSE — G. Yates, 41 Sutter St., completing plans 1 story, concrete warehouse. $40,000. H. A. Emmride, 1280 Indiana St., engr.

Conn., Hartford — GARAGE — General Ice Cream Corp., 51 Walnut St., sketches brick, steel, concrete garage. $50,000. M. L. and H. A. King, 300 Dennison Bldg., Syracuse, N. Y., engrs.

Conn., Milford — FACTORY, etc. — United States Electrical Motors, Inc., 200 E. Slauson Ave., Los Angeles, Calif., 1 story, 200x220 ft. brick, steel, concrete factory and power plant. Over $40,000. L. F. Caproni, 1221 Chapel St., New Haven, engr.

Fla., St. Petersburg—FACTORY — Southern Conveyor Co., Oldsmar, factory, 15 Ave., 3 and 4 Sts. Over $40,000 with equip.

Ill., Chicago—WAREHOUSE, etc.—Sprague, Warner & Co., 600 W. Erie St., plans by A. Epstein, archt. and engr., 2001 W. Pershing Rd., 1 and 2 story warehouse, office and sales building, Franklin and Sacramento Blvds. $1,750,000.

Ill., Chicago—POWER PLANT—U. S. Tobacco Co., 4225 5 Ave., soon lets contract 100x150 ft. power plant, steam turbines, 5 and Kildare Aves. $150,000. R. B. Du Val, c/o owner, engr. Schmidt, Garden & Erickson, 104 S. Michigan Ave., archts.

Ill., Decatur — POWER PLANT — Illinois Iowa Power Co., c/o P. M. Wheeler, 112 E. Washington St., Monticello, rein.-con., brick power plant addn., near here. $200,000.

Ind., Fowler—FACTORY—Sydney B. Craig, Pendleton, 2 story, 65x208 ft. glazed tile canning factory. $45,000.

Ind., Warsaw—FACTORY — Portable Power King Tool Co., K. J. Hinzelman, pres., 1 story, 35x256 ft., brick, concrete, structural steel factory addn. $40,000.

Mich., Bay City—PLANT—Dow Chemical Co., Bay City, Dr. W. H. Dow, pres., 80x200 ft., steel, corrugated transite plant. $100,000.

Mich., Detroit — FACTORY — Gairing Tool Co., 1620 W. Lafayette Ave., plans by R. H. Neubrecht, 233 John R. St., 1 story, 120x300 ft. brick, steel, concrete factory. $100,000.

Mo., St. Louis—GARAGE—Coca-Cola Bottling Co., 2930 N. Market St., soon lets contract 1 story, bsmnt., 98x127 ft., brick, concrete garage, Garrison Ave., Benton St. $40,000 incl. equip. Preston J. Bradshaw, Inc., 718 Locust St., archts.

Mo., St. Louis—PACKING PLANTS—Krey Packing Co., J. F. Krey, vice pres., 2300 Bremer Ave., bids latter part June, reconstructing, imprv. buildings. $100,000.

Mo., St. Louis—FOUNDRY—Messmer Brass Co., 2700 S. 7 St., rein.-con., brick brass foundry, 2708-10-12 S. 7 St.

Mont., Missoula—SUBSTATION—Montana Power Co. Div. Office, Missoula, substaton, reconstructing electric lines. $100,000.

N. H., Manchester — BAKERY — Quality Bakers of America, archts., 120 W. 42 St. New York, bids soon 1 story, bsmnt., 59x100 ft. bakery, 1 story, 50x100 ft. garage, brick, steel, concrete fdns., for Cote Bros., 89 Elm St.

N. J., Bayonne—FACTORY—International Aircraft Trading Co., Inc., 122 E. 42 St., New York, 1 story, brick, steel airplane factory, waterfront.

N. J., Bloomfield—PLANT—Scientific Glass Apparatus Co., 49 Ackerman St., bids soon 2 story, bsmnt., 60x80 ft. brick plant, Ackerman St. $40,000. R. B. Flatt, 50 Broad St., archt.

N. J., Caldwell—FACTORY—Wright Aeronautical Corp., 132 Beckwith Ave., Paterson, 1 story, brick, steel airplane parts factory at Caldwell-Wright Airport. A. Kahn, 2 Center Bldg., Detroit, Mich., engr.

N. J., Paterson—PLANT—Lobosco Bros., 121 McBride Ave., bids soon, 1 story, bsmnt., 67x80 ft. cinder block, brick waste paper storage plant addn. J. Bellomo, 277 Market St., archt.

N. Y., Buffalo—PLANT—Aluminum Co. of America, 1880 Elmwood Ave., remodeling old casting plant to manufacture magnesium castings for aircraft industry. $400,000.

N. Y., Clyde — FACTORY — Vulcan Heel Corp., Burtis Bldg., rebuilding factory destroyed by fire. Over $40,000.

N. Y., Elmira—PLANT—Remington Rand, Inc., S. Main St., 1 story plant addn. Over $40,000.

N. Y., Ithaca — PLANT — Ithaca Leather Products Co., Turner Pl., plant. $40,000 with equip.

N. Y., Niagara Falls—PLANT—Mathiesen Alkali Wks., Inc., Buffalo Ave., E. M. Allen, pres., soon lets contract plant addn. Bid date advanced. CD 6/12—ENR 5/30.

N. Y., Schenectady—PLANT—Pleasant Valley Packing Co., 586 Bway., soon lets contract sausage manufacturing plant. Over $40,000. J. R. Worcester & Co., 79 Milk St., Boston, Mass., engrs. CD 5/14—ENR 5/23.

N. Y., Sidney — PLANT — Argonaut Realty Corp., c/o General Motors Corp., General Motors Bldg., Detroit, Mich., 200 x 500 ft. building at Scintilla Magneto Co. plant. Over $100,000. D. McGuire, c/o owner, engr.

N. Y., Spencer — PLANT — Dairy Farmers Union, cooperative milk plant. Over $40,000 with equip.

N. Y., Troy—PLANT—Trojan Scrap Iron Corp., Division and Front Sts., 70 x 300 ft. plant with crane runway. Over $40,000.

O., Alliance—FACTORY—Taylorcraft Aviation Corp., Alliance, plans by Albert Kahn, Inc., New Center Bldg., Detroit, Mich., doubling size of present plant. $300,000 incl. equip. CD 6/18—ENR 6/20.

O., Cleveland — LAUNDRY — Atlas Laundry Co., Inc., J. J. Biebelhausen, pres., 5416 Detroit Ave., plans by H. M. Morse & Co., archts. and engrs., 1500 Superior Ave. N.E., 1 story, brick, steel laundry. $40,000.

O., Kent—FACTORY—Gougler Machine Co., bids in 30 days, 1 story factory addn. Over $40,000.

O., Springfield—PLANT—In-Tag Div. & Interchemical Corp., 3030 W. 51 St., Chicago, Ill., 1 story plant addn., S. Yellow Springs St. and Driscoll Ave. $100,000.

O., Toledo — PLANT — Haughton Elevator Co., 671 Spencer St., plans by Mills, Rhines, Bellman & Nordhoff, 518 Jefferson Ave., 150x150 ft. plant addn., new office, engineering building. $200,000.

Pa., Lancaster—PLANT—Union Stock Yards, Lancaster, altering and constructing plant addn. $75,000.

Pa., Meadville—PLANT—American Viscose Co., Meadville, plant addn. Over $40,000. Ballinger Co., 105 S. 12 St., Phila., engrs.

Tex., Bryan—PLANT—Eagle Printing Co., Bryan, bids early in July, 1 story, mezzanine, 55x120 ft., monolithic concrete newspaper printing plant. About $40,000. Atkinson & Sanders, Parker Bldg., Bryan, archts. CD 3/28—ENR 4/4.

Tex., Marquez — PLANT — Carter-Gragg Oil Co., P. O. Box 1540, Ft. Worth, subsidiary Standard Oil Co. of New Jersey, through Carter Oil Co., Natl. Bank of Tulsa Bldg., Tulsa, Okla., recycling plant, point in Long Lake Field of Leon Co., near here. $150,000.

W. Va., Nitro—PLANT—American Viscose Co., Nitro, plans by Ballinger Co., 105 S. 12 St., Phila., Pa., plant addn.

Wis., Wisconsin Rapids—BOILER HOUSE—Consolidated Power & Paper Co., Wisconsin Rapids, 4 story, 40x40 ft. brick, steel, rein.-con. boiler house, concrete fdn. T. Utegaard, c/o owner, engr.

★**Alaska**—PLANTS—Standard Oil Co., 225 Bush St., San Francisco, Calif., distribution plants at St. Michael, Noome, Bethel, Dutch Harbor, and Fairbanks. $750,000.

Alta., Lethbridge—PLANT—Pinhorn Oils, Ltd., H. D. Rood, mgr., 703 Royal Trust Bldg., Vancouver, B. C., plant. $50,000.

B. C., Vancouver — SUBSTATION — B. C. Electric Ry. Co., Vancouver, rein.-con. substation, MacKenzie Ave. $90,000.

B. C., Vancouver—DAIRY—C. Schultz Co., Sullivan, dairy and ice cream plant. $40,000.

B. C., Vancouver — PLANT — West Coast Woolen Mills Ltd., 440 Clark St., plant exten.

Man., St. James — PLANT — A. V. Aircraft Co., Ltd., c/o J. Farnsworth ,c/o Ministry of Air Defence, Ottawa, Ont., negotiating for site for aircraft manufacturing plant.

Ont., Alexandria — PLANT — Alexandria Wood Products Ltd., c/o B. MacDonald, Alexandria, wood working plant. $40,000.

Ont., Beeton—PLANT—Vita Cereal Products Ltd., H. R. Hinsamdn, mgr., Beeton, food products manufacturing plant. $50,000.

Ont., Brockville—PLANT—Dominion Starch Products Ltd., 20 Bates St., Montreal, Que., plant. $40,000.

Ont., Crystal Beach — PLANT — Cyclone Coaster Ltd., Crystal Beach, plant. $40,000.

Ont., Hamilton — FURNACE UNIT — Dominion Foundries Ltd., Hamilton, annealing furnace unit addn. $60,000. Prack & Prack, Pigott Bldg., Hamilton, engrs.

Ont., Kenora—PLANT—Land O'Lakes Beverage Co., Ltd., c/o C. K. Commery, Kenora, plant. $40,000.

Ont., New Toronto—PLANT—Northern Pigment Co. Ltd., 7-22 St., plant exten. $40,000. James Proctor & Redfern, Excelsior Life Bldg., Toronto, engrs. CD 1/18—ENR 1/25.

Ont., Oshawa—PLANT, etc.—General Motors of Canada, Ltd., Oshawa, 1 story, bsmnt., 45x600 ft. brick, steel plant exten., concrete fdn., $50,000; concrete shipping dock, wharf, etc., $30,000.

Ont., Owen Sound—WAREHOUSE—National Grocers, Ltd., Owen Sound, brick, steel warehouse, concrete fdn. $100,000.

Ont., Sarnia — PLANT — Insulated Building Products Ltd., 14 Johnston St., plant. $40,000.

Ont., Sarnia — PLANT — Mac Craft Corp. Ltd., 218 Nelson St., Wallaceburg, J. E. MacDonald, pres., boat building plant, on harbor front. $40,000.

Ont., Smithville — PLANT — Howard-Smith Paper Co. Ltd., 407 McGill St., Montreal, Que., bids soon addn. to chemical section of plant. About 40,000 to $50,000.

Ont., Sudbury — PLANT — Dominion Brick, Tile & Supply Co., Ltd., H. D. Eby, mkr., Sudbury, brick manufacturing plant. $40,000.

Ont., Toronto—PLANT—Sharp & Dohme, Inc., Broad and Wallace Sts., Phila., Pa., Canadian subsidiary plant for manufacture pharmaceutical products.

Ont., Toronto—PLANT—Vitagramne Foods Ltd., 18 Eaton Ave., plant.

Industrial Buildings (Continued)

Ont., Westboro — PLANT — Ketchum Mfg. Co. Ltd., Westboro, plant exten.

Que., Beauharnois—PLANT—St. Laurence Alloys Ltd., 14 Canal Rd., plant exten. $50,000.

Que., Lachine—PLANT—Barry Steel Products Ltd., 466 Victoria Ave., plant for manufacture road machinery, general plate and sheet metal, etc.

Que., Lachine — TOOL ROOM — Dominion Eng. Wks. Ltd., 1st Ave., bids soon I story, bsmnt., 40x240 ft., brick, steel tool room. $50,000.

Que., Louiseville—PLANT—Producers Co-operative Co., Ltd., St. Lin, wool manufacturing plant. $40,000.

Que., Montreal—PLANT—Steelbound Litho Plates Ltd., c/o L. D. Crestohl, atty., Dominion Square Bldg., plant for manufacture of steel plates, zinc plates, etc. $50,000.

Que., Montreal East — PLANT — Canadian Copper Refining Ltd., 14 Durocher St., plans by Perry, Luke & Little, 1405 Bishop St., Montreal, plant exten. $40,000.

Que., Noranda — PLANT — Noranda Mines Ltd., smelter plant exten. $40,000. A. W. Harper, c/o owner, engr.

Que., St. Jerome—PLANT—V. 9 Beverage Co., Ltd., c/o R. Trudeau, St. Jerome, beverage manufacturing plant. $49,000.

Que., St. Laurent—PLANT—A. Nihon, 133 St. Paul St. W., Montreal, remodeling, constructing exten. to glass manufacturing plant, Quimet Ave. $200,000.

Que., Shawinigan Falls—PLANT—Canadian Industries, Ltd., 1135 Beaver Hall Hill, Montreal, plant. $70,000.

Que., Sherbrooke — PLANT — Canadian Silk Products Ltd., 7 Drummond Rd., 1 story, bsmnt., 120x133 ft., brick, concrete plant exten. $40,000. J. C. Day, 630 Dorchester St., Montreal, engr.

Que., Sherbrooke—PLANT—Lucas Imprvt. & Fuel Ltd., 6756 Waverley St., Montreal, brick, steel manufacturing plant, concrete fdn. $40,000.

Que., Sherbrooke — TEXTILE PLANT — Quebec Rayon Mills Ltd., textile plant. $40,000.

Que., Yamachiche—PLANT — Producers Co-operative Co., Ltd., St. Lin, wool manufacturing plant. $40,000.

BIDS ASKED

Bids Asked July 1

Mass., Somerville (br. Boston)—PLANT—Northeast Packing Co., 82 North St., Boston, 2 story, brick, steel abattoir, cold storage plant, 20 Water St. Over $40,000. M. Fruchtbaum, 400 Chestnut St., Phila., Pa., engr.

Bids Asked July 3

Ga., Atlanta — PAPER PLANT — Montag Bros., Inc., 182 Marietta St. N.W., 3 story, bsmnt., rein.-con., brick, tile plant addn. Over $40,000. Robert & Co., Bona Allen Bldg., engrs. CD 6/22.

Bids Asked July 8

Ind., Evansville — POWER PLANT — Sunbeam Electric Mfg. Co., W. V. Stipples, mgr., Morgan Ave., imprv. power plant. $60,000. Bevington-Williams, Inc., 730 Ind. Pythian Bldg., Indianapolis, engrs.

Bids Asked

Calif., Vernon (br. Los Angeles)—PLANT—U. S. Hardware & Paper Co., 3001 E. Pico Blvd., Los Angeles, (selected list bidders) 1 story, 300x400 ft. paper processing plant, rein.-con., Soto and E. 26 Sts. Over $40,000. M. P. Miller, Bd. Trade Bldg., Los Angeles, archt. CD 5/21—ENR 5/23.

Ill., Chicago—FACTORY—Battey & Childs, archts., 231 S. LaSalle St., (invitation only) 5 story, bsmnt., 100x120 ft. factory addn., for Campbell Soup Co., 2550 W. 35 St. About $200,000.

Ia., Cedar Rapids — FACTORY — Midland Rubber Co., 211 A Ave. N.E., factory. $40,000. CD 5/2—ENR 5/16.

Pa., York—PLANT — York Narrow Fabrics Co., Inc., York, H. W. Stuffer, pres.-treas., 1 story plant addn., Penna. R.R. right-of-way, east of Virginia Ave. Over $40,000. CD 6/6—ENR 6/13.

★**Tex., Joaquin** — PLANT — P. H. Hewitt, Longview, construction, equipping 50,000,000 ft. recycling plant, between Center and Joaquin, near Joaquin, $260,000; drilling, casing, developing number natural gas wells in Joaquin Fields, between Center and Joaquin, $250,000. CD 6/20.

Tex., Longview—ORE REDUCTION PLANT—Madaras Steel Corp., c/o C. H. Grissom, pres., Longview, iron ore reduction plant. $175,000. CD 2/1—ENR 2/8.

Wis., Appleton — GARAGE — Exide Battery Service Co., Appleton, 2 story, 50x110 ft., brick block garage, concrete fdn. R. M. Connelly, Appleton, engr.

Wis., Milwaukee — PLANT — Allen-Bradley Co., 1326 S. 2 St., 4 story, 90x126 ft. rein-con., cinder block plant addn., concrete fdn. F. Scott, 724 E. Mason St., archt. CD 2/5—ENR 2/8.

Ont., Thorold—PLANT—Beaver Wood Fibre Co. Ltd., L. T. Bradley, mgr., 7 Allanburg Rd., 154x180 ft. steel plant exten., concrete fdn. $40,000.

LOW BIDDER

Calif., San Francisco—PUBLISHING PLANT—San Francisco Call-Bulletin, Call Bldg., rein.-con. newspaper plant, from Cahill Bros., 206 Sansome St., over $250,000. CD 4/24—ENR 5/2.

CONTRACTS AWARDED

Ala., Gadsden—MILL—Goodyear Tire & Rubber Co., 1144 E. Market St., Akron, O., 1 story, 100x560 ft., steel, brick, rein.-con. mill addn., to A. K. Adams & Co., 542 Plum St. N.W., Atlanta, Ga. $175,000.

Calif., Monterey—WAREHOUSE—California Packing Corp., 101 California St., San Francisco, warehouse addn., to M. J. Murphy, Carmel, $45,000. CD 6/14—ENR 6/2.

Calif., Sebastopol—PLANT—Barlow Bros., Sebastapol, manufacturing and canning plant, at Barlow Station, near here, day labor. $40,000.

Conn., Elmwood (br. Hartford)—PLANT—Holo-Chrome Screw Corp., Brook St., 1 story, 100x200 ft., brick plant addn., Brook St., to Robert G. Bent Co., 93 Edwards St., Hartford. Est. $120,000.

Conn., Waterbury—PLANT—American Brass Co., W. Main St., 1 story, 80x200 ft., brick, glass block addn., South Plant, 1 story, 62x82 ft., brick, concrete North Plant addn. Owner builds. $65,000. CD 5/28—ENR 6/13.

Fla., Fernandina—PLANT—Container Corp. of America, Fernandina, plant addn., to George D. Auchter Co., E. Adams St., Jacksonville. Est. over $40,000.

Ill., Chicago—TRUCK TERMINAL—Cushman Motor Delivery, 315 N. Ada St., 1 story, 155x266 ft. brick truck terminal, Armour and Kinzie Sts., to Gutensky Constr. Co., 320 S. Spaulding Ave. Est. $75,000. Koenigsberg & Weisfeld, 155 N. Clark St., archts.

Ill., Chicago—PLANT—Excelsior Steel Furnace Co., 118 S. Clinton St., 2 story, 40x100 ft. plant addn., Hickory and Evergreen Sts., to Gerhardt F. Mayne, 7 S. Dearborn St. Est. $40,000. J. J. Cerny, 2341 S. Austin Blvd., archt.

★**Ill., Hudsonville**—POWER PLANT—Central Illinois Pub. Serv. Co., 607 E. Adams St., Springfield, power plant, to Campbell-Lowrie-Lautermilch Corp., 400 W. Madison St., Chicago. Est $500,000. Bids 5/20. CD 5/9—ENR 5/16.

Ill., La Grange—PLANT—Electro Motive Corp. Div. of General Motors, General Motor Bldg., Detroit, Mich., 3 story, bsmnt., 40x140 ft. plant addn. to Thorgerson & Ericksen, 228 N. LaSalle St. Chicago. Est. $100,000.

Ind., Indianapolis—PLANT—Marmon Herrington Co., Washington and Harding Sts., general contract 2 story, brick, steel, rein.-con. plant, to H. K. Ferguson Co., Hanna Bldg., Cleveland, O., $250,000, cost plus basis. Awarded 6/19.

Mass., Everett (br. Boston)—PLANTS—Boston Consolidated Gas Co., 100 Arlington St., Boston, Thylox plant for removal of sulfur and plant for removal of gum, to Koppers Co., Engineering and Construction Div., 2000 Koppers Bldg., Pittsburgh, Pa.

Mass., Gardner—LABORATORY—Florence Stove Co., Gardner, 1 story, 70x80 ft., brick, steel laboratory unit to Columbus & Berg, 291 Chestnut St. Est. $40,000. Bids 6/17. CD 6/13—ENR 6/20.

Mich., Detroit—FACTORY—H. & H. Tube & Mfg. Co., 261 Scotten Ave., 1 story, brick, concrete factory, plain fdn., to C. R. Joelson, 20215 Gilman St. Est. 45,000. CD 6/6—ENR 6/13.

Mich., Sparta — FACTORY — Sparta Fdry Div. of Muskegon Piston Ring Co., Sparta, brick, steel factory addn., plain fdn., to E. H. Beckering, 2140 Horton St. S. E., Grand Rapids. Est. $40,000. Weemhoff & Steketee, 622 Murray Bldg., archts.

N. J., Camden—PLANT—Campbell Soup Co., 2nd and Market Sts., plant addn., to Thomas F. Gibson Co., 2nd and Market Sts.

N. J., Clifton—MACHINE SHOP—Magor Car Corp., Slade St., 1 story, 75x140 ft., steel, brick machine shop to Samworth-Hughes Co., Inc., 177 Van Houten St., Paterson.

N. J., Grasselli—WAREHOUSE—General Aniline Wks., Grasselli, brick, steel warehouse Bldg. 48, to White Constr. Co., Inc., 95 Madison Ave., New York. $48,000. R. Kropp, Grasselli, engr.

N. J., Paterson—MILK PLANT, etc.—Crowley Milk Co., Inc., 102 Thomas St., 1 story, 106x130 ft. milk plant and garage addn., brick, George and Railroad Ave., to Samworth-Hughes Co., Inc., 177 Van Houten St.

★**N. Y., Brooklyn**—PLANT—E. R. Squibb & Sons, 25 Columbia Heights, Brooklyn, 12 story, bsmnt., 84x141 ft., with 6 story, bsmnt., 62x84 ft. wing, plant addn., to Turner Constr. Co., 420 Lexington Ave., New York. Est. $600,000. Abbott, Merkt & Co., 10 E. 40 St., New York, archts and engrs.

N. Y., College Point (sta. Flushing)—FACTORY—Edo Aircraft Corp., 13-10 111 St., design and construction, plant addn., to Brown & Matthews Co., 122 E. 42 St., New York. Est. $125,000. Evans, Moore & Woodbridge, 101 Park Ave., New York, consult. archts.

N. Y., Falconer—FACTORY—Swanson Machine Co., L. Swanson, genl mgr., 59 Hopkins Ave., Jamestown, altering, imprv. 2 and 3 story, bsmnt. factory buildings, separated contracts. $40,000 with equip. W. Stormer, c/o owner, engr. CD 5/29—ENR 6/13.

O., Cleveland—PLANT—East Ohio Gas Co., C. E. Gallagher pres., E. 6 St., natural gas storage plant, three 57 ft. nickel steel storage tanks (steel fabrication by Republic Steel Corp., Republic Bldg.,) 1 story, 26x145 ft. brick, steel pump house, to Gas Mchry Co., 16,100 Waterloo Rd. Est. $300,000. Awarded 6/12.

O., Cleveland — FACTORY, etc. — Lakeside Steel Imprv. Co., C. W. Derhammer, pres., 1 story, 60x200 ft. factory and office building, to Alger-Raw, Inc., 12430 Cedar Rd. Est. $50,000. Bids 6/3, awarded 6/15. CD 5/29—ENR 6/6.

Pa., Johnsonburg—PLANT—T. K. Hendryx, archt., 165 Interstate Parkway, Bradford, altering, remodeling plant for Costania Paper Co., Johnsonburg, separate contracts, under supervision architect. $50,000. CD 6/7—ENR 6/13.

Pa., Montoursville—PLANT—Concrete Products Co. of America, G. M. Bateman, mgr., 1505 Race St., Phila., concrete pipe mfg. plant, 3 large buildings, 80x120 ft., and 26x60 ft. large dry kiln, separate contracts. $40,000.

Pa., Phila.—TERMINAL—Atlantic Refining Co., 260 S. Broad St., terminal, Fort Mifflin, on Delaware River. Owner builds. Construction started.

Pa., Phila.—PLANT—Phila. Coke Co., Richmond St., plant building reconstruction, to Koppers Co., Koppers Bldg., Pittsburgh. Est. $40,000.

Pa., Pittsburgh—WAREHOUSE—Great Atlantic & Pacific Tea Co., 420 Lexington Ave., New York, 5 story, bsmnt., 40x245 ft., brick, concrete warehouse, to Martin & Nettrour Contg. Co., Diamond Bank Bldg. Est. $150,000. A. Moore, c/o owner, company's ch. engr.

Tex., Robstown—BAKERY, etc.—H. E. Butt Grocery Co., 2021 Mestina St., 1 story, hollow tile bakery, warehouse and store building, day labor. $40,000. M. P. Mull, P. O. Box 601, Corpus Christi, archt. CD 8/8.

Wis., Beloit—IRON WORKS—Beloit Iron Wks., 3 story, 65x125 ft., brick, concrete iron works exten., concrete fdn., to Cunningham Bros., 359½ E. Grand Ave.

Wis., Burlington—WAREHOUSE — Burlington Mills, 2 story, 40x100 ft. brick block warehouse addn., concrete fdn., to J. G. Jansen Constr. Co., 3001 N. 38 St., Milwaukee. H. W. Tullgren, 1234 N. Prospect Ave., Milwaukee, archt.

Wis., Waukesha — WAREHOUSE — Waukesha Motor Co., 1 and 2 story, 75x180 ft., brick, steel warehouse, concrete fdn., masonry, carpentry and concrete, to C. Christiansen, 338 Maple Ave., steel, to Wisconsin Bridge & Iron Co., 5023 W. 35 St., Milwaukee. CD 1/24—ENR 2/8.

Alta., Edmonton—PLANT—Gainer's Limited, A. G. Walker, building supt., 80 Ave. at 96 St., rebuilding 4 story, 60x180 ft. plant, section destroyed by fire, own forces. $200,000. R. M. Hardy, c/o owner, archt. CD 5/8—ENR 5/16.

N. S., Halifax—PLANT—Canadian Industries Ltd., 1135 Beaver Hall Hill, Montreal, Que., 1 story, 90x182 ft., steel, frame fertilizer plant exten., Pier 9, to Brookfield Constr. Co., 169 Hollis St. $45,000.

Ont., Dundas—FACTORY—Bertram & Sons, 15 Flatt Ave., 100x150 ft. and 75x100 ft. brick, concrete factory extens., to Piggott Constr. Co., 36 James St. S., Hamilton. Est. $100,000. Hutton & Souter, Piggott Bldg., Hamilton, archts.

Ont., Hamilton — PLANT — Cub Aircraft Corp., Ltd., 2 Adam St., frame plant exten., concrete fdn., also 60x100 ft hangar and additional 50 ft. exten. to present plant, to Canadian Eng. & Contg. Co., Ltd., 25 Hughson St. Est. $40,000. CD 6/12.

Ont., New Toronto — SHOP — Anaconda Amer. Brass Ltd., 21-8 St., 1 story, electric casting shop, steel, brick, to Carter-Halls-Aldinger Co., Ltd., 419 Cherry St., Toronto. Est. $45,000.

Ont., St. Catharines—FACTORY—McKinnon Industries, Ontario St., 40x165 ft., brick, steel foundry addn., 26 ft. high, to Newman Bros., 127 St. Paul St. Est. $50,000. Bids 5/3, awarded 6/14. CD 5/2—ENR 5/16.

Ont., St. Catharines—PLANT—McKinnon Industries, Ltd., Ontario St., 1 story, 60x280 ft. Delco plant addn., to Smith Bros. Constr. Co., 1740 Ellen Ave., Niagara Falls. Est. $50,000.

Ont., Toronto—PLANT—Atlas Eng. & Machine Co., Ltd., 14 Eastern Ave., general contract 150x186 ft., steel, brick plant, concrete fdn., to Chestnut-MacGregor Ltd., 96 Bloor St. Total est. $40,000. W. L. Somerville, 30 Bloor St. W., archt.

Ont., Windsor—PLANT—Dominion Forge & Stamping Co., T. Herdegon, mgr., 2480 Seminole St., 1 story, 86x170 ft. brick, steel plant addn., to Allan Constr. Co., 44 Wyandotte St. E. Est. $40,000. Awarded 6/20.

Que., Gatineau—PLANT—Masonite Corp. of Canada, Ltd., Gatineau, 2 story, bsmnt., 61x140 ft. brick, steel plant exten., concrete fdn., to E. Brunet & Sons, 35 Aylmer Rd., Hull. Est. $50,000.

OFFICIAL PROPOSALS

Official notices of bids wanted on construction and related work, equipment and material for government, state, municipal departments and private enterprises.

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS 50 CENTS PER LINE (OR FRACTION) PER INSERTION **COPY RECEIVED** UP TO 4 P. M. TUESDAY FOR ISSUE OUT THURSDAY SUBJECT TO SPACE OPEN FOR LAST-MINUTE ADS **SEND COPY** TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK, N. Y.

Bids: July 8 (136)

Spillway Weir

CONTRACT 50
RICHARDS CORNER DAM—RECONSTRUCTION OF SPILLWAY WEIR

SEALED PROPOSALS addressed to The Board of Contract and Supply of The Metropolitan District and endorsed "PROPOSAL FOR RECONSTRUCTION OF SPILLWAY WEIR AT THE RICHARDS CORNER DAM IN THE TOWN OF NEW HARTFORD" will be received at the Executive Office of The Metropolitan District at the Municipal Building, 550 Main Street, Hartford, Connecticut, until 1:15 o'clock P.M., Eastern Standard Time, (2:15 o'clock P.M. Daylight Saving Time) Monday, July 8, 1940, at which time and place they will be publicly opened and read.

After the bids are opened and read they will be taken under advisement and the award of the contract, if awarded, will be made as soon thereafter as practicable.

The work consists of cleaning and gunniting the downstream surface of the Spillway Weir and portions of the east wall of the Spillway Channel. A small part of the Spillway Weir is to be removed and rebuilt to revised outlines. All materials and labor are to be furnished by the Contractor.

Plans and specifications may be obtained on and after June 26, 1940, at the Office of the Manager and Chief Engineer of The Water Bureau of The Metropolitan District, 1026 Main Street, Hartford, Connecticut, on deposit of five dollars ($5), in cash or certified or cashier's check, made payable to The Water Bureau of The Metropolitan District, which amount will be refunded if both are returned in good order within one month of date of opening of bids. No deposits will be refunded after that time. Specifications used in making a bid will be considered as returned.

Each proposal must be accompanied by a certified or cashier's check for an amount covering not less than ten per cent. (10%) of the total amount bid, made payable to The Metropolitan District, and a satisfactory surety bond, as stated in the Information for Bidders, for the total amount bid will be required of the successful bidder for the faithful performance of the contract.

The right is reserved to accept any bid, whether or not the lowest, or to reject any or all bids as the interest of the District may appear to require.

BOARD OF CONTRACT AND SUPPLY,
By: Richard Dillon, Clerk.

Hartford, Connecticut.
June 13, 1940.

Bids: July 8 (113)

Sewers

EXTENSIONS TO SEWER SYSTEM, SEWAGE PUMPING STATIONS AND FORCE MAINS
CITY OF FORT LAUDERDALE, FLORIDA

Sealed bids will be received by the City Commission of the City of Fort Lauderdale, Florida, at the office of the City Commission, City Hall, Fort Lauderdale, Florida, up to 10:00 o'clock, A. M., Eastern Standard Time, July 8, 1940, at which time and place all bids received will be publicly opened and read aloud, for furnishing all materials, equipment, and labor and constructing extensions to the Sanitary Sewer System, including Four pumping stations, 103,000 feet of 6", 8", 10", 12", 15" and 18" vitrified or concrete pipe sewers, 6,700 feet of 8", 10" and 18" cast iron sewers, and 7,500 feet of 4", 6", 8", 10" and 12" cast iron force mains, manholes and appurtenances, and 480 feet of 10" subaqueous cast iron main. Manufacturers of sewage pumps may bid direct to the city.

Any bid received after the specified time and date will not be considered.

Each bid shall be submitted on forms supplied by the City Manager or the Consulting Engineers. Each bid must be accompanied by a certified check or bid bond in the amount of five per cent (5%) of the base bid as guarantee that the bidder, if awarded the contract, will within five (5) consecutive calendar days after written notice being given of such award, enter into a written contract with the City of Fort Lauderdale, Florida, in accordance with the accepted bid, and give a Contract Surety Bond, satisfactory to the City of Fort Lauderdale, Florida, equal to one hundred per cent (100%) of the contract price.

The successful bidder will be required to carry, at his own expense, Workmen's Compensation Insurance, Public Liability and Property Damage Insurance, all subject to the approval of the said City Commission.

Plans, specifications and contract documents may be examined at the office of the City Manager of the City of Fort Lauderdale, Florida, or, at the office of Solomon & Keis, 257 Broadway, Troy, N. Y., and such plans, specifications and contract documents may be received from either of said offices by depositing therewith the sum of Twenty-five Dollars ($25.00) for each set. Any bidder, upon returning such set promptly and in good condition, will be refunded his payment, and any non-bidder upon so returning such set within ten (10) days after receipt of bids, will be refunded Fifteen Dollars ($15.00).

Bidder's qualifications must be satisfactory to the City Commission of Fort Lauderdale, Florida.

The City of Fort Lauderdale, Florida, reserves the right to waive formalities in any bid and to reject any and all bids.

City of Fort Lauderdale, Florida
J. H. Philpott
City Manager

June 10, 1940

Bids: June 28 (120)

Bridge Reconstruction

NOTICE TO CONTRACTORS:—STATE OF NEW YORK—TRANSIT COMMISSION

(Metropolitan Division — Department of Public Service)—270 Madison Avenue, New York, N.Y. FOR THE RECONSTRUCTION OF THE BRIDGE (1) CARRYING EAST 204TH STREET OVER THE TRACKS OF THE NEW YORK AND HARLEM RAILROAD COMPANY (leased and operated by THE NEW YORK CENTRAL RAILROAD COMPANY, HARLEM-ELECTRIC DIVISION) and (2) ALTERATION AND ADDITION TO BRIDGE CARRYING MOSHOLU PARKWAY OVER THE TRACKS OF THE NEW YORK AND HARLEM RAILROAD COMPANY (leased and operated by THE NEW YORK CENTRAL RAILROAD COMPANY, HARLEM-ELECTRIC DIVISION), AND RELATED STRUCTURES, IN THE BOROUGH OF THE BRONX, NEW YORK CITY, N. Y. Pursuant to the provisions of Chapter 481, Laws of 1910, Chapter 936, Laws of 1935, and amendments thereto, and under the rules and regulations for projects financed in whole or in part with Regular Federal Aid, Grade Crossing or Secondary Highway Funds, appropriated by Section 8 of the Act of June 16, 1936, (Pub. No. 686—74th Congress), sealed proposals for the reconstruction of the above project will be received by the Transit Commission at the office of the Commission, 10th Floor, 270 Madison Avenue, New York, New York, until Eleven o'clock A.M. D.S.T. June 28th, 1940, at which time and place they will be publicly opened and read. Maps, plans, specifications and proposal forms may be obtained at the office of the Transit Commission, 270 Madison Avenue, New York, New York, upon payment of Ten Dollars ($10.00) for the plans and proposal forms. Standard specifications are Two Dollars ($2.00) per copy. No refund will be made on plans, proposal forms or specifications. Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Building, Albany, New York.

The proposal must be submitted in a separate sealed envelope with the name of the project plainly indicated on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check, payable to the order of the Transit Commission, State of New York, for a sum not less than five (5) per centum and not more than six (6) per centum of the gross sum bid. Such deposit must not be enclosed in the envelope containing the proposal. The retention and disposal of such cash, draft or check by the Transit Commission shall conform with the procedure specified in subdivision 2 of Section 38 of the Highway Law. The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when 10% of the work under the contract has been completed.

Federal Special Provisions require that the minimum wages to be paid on this project shall be as follows, unless shown otherwise in the itemized proposal:

Skilled labor, ninety five cents per hour; Intermediate Grade Labor, eighty seven and one half cents per hour; Unskilled Labor, eighty seven and one half cents per hour.

In conformity with the provisions of Articles 8 and 8A of the State Labor Law, the minimum hourly rate of wages has been established and is annexed to and forms a part of the Special Specifications for the project and may be ascertained by reference thereto.

The right is reserved to reject any or all bids.

TRANSIT COMMISSION
STATE OF NEW YORK
WILLIAM G. FULLEN, CHAIRMAN
REUBEN L. HASKELL, COMMISSIONER
M. MALDWIN FERTIG, COMMISSIONER
MACK NOMBURG, Secretary

Bids: July 8 (143)

Road

BOROUGH OF BUTLER,
MORRIS COUNTY, NEW JERSEY

Sealed bids will be received by the Mayor and Council of the Borough of Butler, Morris County, New Jersey, on July 8, 1940, at eight o'clock P. M. Daylight Saving Time, at the Borough Hall in said Borough of Butler, for the construction of approximately one-half mile of road of bituminous concrete Type A or Type T, on a modified penetrated macadam base, with approximately 950 feet of storm drains, catch basins, and approximately 330 feet of concrete curb, according to plans and specifications on file in the office of Newell C. Harrison, Engineer, or John F. Bormuth, Borough Clerk.

The information for bidders, the form of the bid, the form of the contract, plans, specifications and forms may be examined in the above offices or may be obtained upon payment of Five Dollars ($5.00) in cash for each set. The Mayor and Council reserve the right to reject any or all bids.

Each bidder must deposit with his bid a certified check made payable to the Borough of Butler for not less than ten per cent of the total amount of the bid. The successful bidder will subsequently be required to furnish a satisfactory bond to the Borough of Butler in the full amount of the contract.

John F. Bormuth
Borough Clerk

Dated: June 17, 1940.

OFFICIAL PROPOSALS

Bids: July 12 (155)

Overpass and Approaches

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

READVERTISEMENT

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

ROUTE 49, SECTION 16, RELOCATION AT SOUTH DENNIS

Construction of Relocation at South Dennis on Route 49, Section 16, including Overpass and Approaches at Pennsylvania-Reading Seashore Line, Cape May County, length 0.568 miles. Federal Aid Project FAGH-96B(1).

Estimated:

Roadway Items

12,558 cu. yds. roadway excavation unclassified
214,735 cu. yds. borrow excavation
35,030 cu. yds. wet excavation
24,059 sq. yds. 9" rein. conc. pavement surface

Bridge Items

672 cu. yds. foundation excavation
1,497 cu. yds. concrete in structures
348,000 lbs. structural steel
185,600 lbs. reinforcement steel in structures

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J., on Friday, July 12, 1940, at eleven o'clock, EASTERN STANDARD TIME, twelve o'clock Noon, DAYLIGHT SAVING TIME, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed work is a "Federal Aid Grade Crossing Project" under the provisions of Section 3 of the Federal Act approved June 8, 1938, Public No. 584-75th Congress, and is to be performed in accordance with the Special Provisions and Requirements of the Federal Works Agency, Public Roads Administration, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 1537 Atlantic Avenue, Atlantic City, N. J. The attention of bidders is directed to the Special Provisions covering subletting or assigning the contract and to the use of Domestic Materials. The minimum wage paid to all unskilled labor employed on this contract shall be 50¢ per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be 65¢ per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.20 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made on the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000. and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: E. Donald Sterner
State Highway Commissioner

Bids: July 12 (154)

State Highway Work

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for:

RT. 49, SEC. 12A, MUDDY RUN BRIDGE

Construction of bridge on Route 49, Section 12A, over Muddy Run in Bridgeton, Cumberland County. The contract consists of the construction of a reinforced concrete bridge of 10' span and incidental work.

Estimated:

275 cu. yds. foundation excavation
294 cu. yds. concrete in structures
8,200 lbs. reinforcement steel
272 sq. yds. reinforced concrete pavement

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N.J. on Friday, July 12, 1940, at eleven o'clock, EASTERN STANDARD TIME, twelve o'clock Noon, DAYLIGHT SAVING TIME, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made on the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: E. Donald Sterner
State Highway Commissioner

Bids: July 17 (150)

State Highway Work

Sealed proposals will be received by the State Highway Department at its office, Dover, Del., until 2:00 P. M. E. S. T. July 17, 1940, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 679
Warwick to Middletown
New Castle County

22' Cement Concrete Pavement 3.40 Miles
Federal Aid Project 183-A (1)

19,800 Cu. Yds. Unclassified Excavation
1,000 Cu. Yds. Borrow
700 Tons Broken Stone Base Course
270 Tons Bituminous Concrete Surface Course
9,830 Cu. Yds. Cement Concrete Pavement
3,400 Lin. Ft. ¾" Slip Dowel Trans. Expansion Joint
10,000 Lin. ft. Transverse Contraction Joint
10 Cu. Yds. Cement Concrete Masonry
250 Lbs. Reinforcing Steel
485 Lin. Ft. 12" T & G R. C. Pipe
115 Lin. Ft. 15" R. C. Pipe
323 Lin. Ft. 18" R. C. Pipe
425 Lin. Ft. 24" R. C. Pipe
57 Lin. Ft. 30" R. C. Pipe
60 Lin. Ft. 36" R. C. Pipe
125 Lin. Ft. Type No. 1 Cement Concrete Parkway Curb
6 Catch Basins
1 Manhole
3,000 Lbs. Castings
210 Sq. Yds. Removal of Present Pavement

CONTRACT 733
Dagsboro to DuPont Road
Sussex County

22' Cement Concrete Pavement 2.161 Miles
Federal Aid Project 184-A (1)

1.6 As Clearing
1.6 As Grubbing
7,800 Cu. Yds. Unclassified Excavation
500 Cu. Yds. Excavation for Structures
2,600 Cu. Yds. Borrow
5,720 Cu. Yds. Cement Concrete Pavement
2,100 Lin. Ft. ¾" Slip Dowel Transverse Expansion Joint
5,400 Lin. Ft. Transverse Contraction Joint
360 Cu. Yds. Cement Concrete Masonry
29,500 Lbs. Reinforcing Steel
120 Lin. Ft. 12" T & G R. C. Pipe
509 Lin. Ft. 15" R. C. Pipe
120 Lin. Ft. 24" R. C. Pipe
70 Lin. Ft. 10" Corrugated Metal Pipe
1,130 Lin. Ft. Timber Piles
3.6M Ft. B. M. Sheet Piles (Left in Place)
400 Lin. Ft. Wood Shoulder Curb
2 Catch Basins
1,000 Lbs. Castings
350 Sq. Yds. Removal of Present Pavement

CONTRACT 722-A
Motts Corner to Flemings Landing
Kent County
12'-0" Creosoted Timber Bridge

200 Cu. Yds. Excavation for Structures
300 Cu. Yds. Borrow
7.5M Ft. B. M. Creosoted Timber for Bridges
900 Lin. Ft. Creosoted Timber Piles
6.5M Ft. B. M. Sheet Piles (Left in Place)

CONTRACT 747
Dover High School Service Drive
Kent County 0.11 Mile

500 Cu. Yds. Unclassified Excavation
600 Tons Broken Stone Base Course
100 Cu. Yds. Gravel Surface Course
200 Tons Bituminous Concrete Surface Course
600 Lin. Ft. 6" Cement Concrete Curb
125 Lin. Ft. 8" Cement Concrete Curb
2,200 Sq. Ft. 4" Cement Concrete Sidewalk.

CONTRACT 748
Bituminous Concrete For Maintenance
New Castle County

3,500 Tons Bituminous Concrete (Federal Classification H)
To be delivered F. O. B. State Highway Department Trucks in New Castle County

These contracts will come under the provisions of the regular Federal Highway Act, as amended.

The Employment Agency for contracts in New Castle County shall be the Employment Service Division of the Unemployment Compensation Commission, at 601 Shipley Street, Wilmington, Delaware; in Kent County, the Employment Service Division of the Unemployment Compensation Commission, Dover, Delaware; and in Sussex County, the Employment Service Division of the Unemployment Compensation Commission, Georgetown, Delaware. The minimum wages paid will be: for New Castle County, skilled labor 80c per hour; intermediate grade labor 50c per hour, and unskilled labor 35c per hour; for Kent and Sussex Counties, skilled labor 70c per hour; intermediate grade labor 40c per hour, and unskilled labor 30c per hour.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for 90 per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No....."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained after July 1, 1940, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: F. V. duPont, Chairman.
W. W. Mack, Chief Engineer.
Dover, Delaware.
June 19, 1940.

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330 W. 42nd St., New York, N. Y.

U. S. GOVERNMENT

OFFICE OF CONSTRUCTING QUARTERMASTER, P. C. Dept., Quarry Heights, C. Z. Sealed Bids, in triplicate, subject to the conditions contained herein, will be received until 2 P.M., E.S.T., July 10, 1940, and then publicly opened for furnishing materials and equipment and performing all labor necessary to *construct and complete one (1) Engine Test Building, one (1) Equipment Repair Building, one (1) AC Airplane Repair Shop, one (1) Engine Repair Shop* and *one (1) Depot Supply Building* at Albrook Field, Canal Zone. Bids will be opened simultaneously in *a.* New York at office of Constructing Quartermaster, 90 Church Street; *b.* San Francisco at office of Constructing Quartermaster, Fort Mason, and *c.* Canal Zone at office of Constructing Quartermaster, Panama Canal Department, Albrook Field, Canal Zone. Plans and specifications are available from offices of the above Constructing Quartermasters upon deposit of One Hundred Dollars ($100.00) certified check made payable to Treasurer of the United States. Information upon application to Constructing Quartermaster, Panama Canal Department, Albrook Field, Canal Zone. Time will be a material factor for the purpose of comparing bids and there will be added to each bid other than the one offering to complete in the shortest time an amount equal to the daily liquidated damages named in the Invitation for Bids multiplied by the number of calendar days that such bidders have named for performance of the work in excess of the days named by the bidder proposing to do the work in the shortest time. (69)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Lowry Field, Denver, Colorado. Sealed proposals in triplicate will be received at this office until 2:00 P. M., M.S.T., July 12, 1940, and then publicly opened for *Construction and Completion of Air Corps Photographic and Clerical School and Air Corps Armament School* at this station. Certified check in the amount of $50.00, payable to the Treasurer of the U. S., is required for plans and specifications. Further information on application to this office. (140)

WAR DEPARTMENT, Office of The Constructing Quartermaster, Hill Field, Ogden, Utah, June 14, 1940—Sealed proposals will be received at this office until eleven (11) o'clock A.M. (M.S.T.) on the 16th day of July, 1940 and then opened for the furnishing of all labor, materials, and equipment and performing all work required for the *construction and completion of Electric Distribution and Street Lighting System, Substation, Switching Station and Transformer Vaults, at Hill Field, Ogden, Utah,* in strict accordance with specification No. 1625 E, the schedules included, and the drawings mentioned therein. Ten dollars ($10.00) deposit in the form of a Certified Check made payable to the Treasurer of the United States is required to obtain plans and specifications at the above office. (145)

WAR DEPARTMENT, Office of the Constructing Quartermaster, San Antonio, Texas and Vicinity, Fort Sam Houston, Texas. Sealed proposals will be received at this office until 11 A.M., C.S.T., July 3, 1940 and then publicly opened, for *construction and completion of Equipment Repair Building (Superstructure), Duncan Field, Texas.* Plans and Specifications will be furnished upon deposit of $15.00, certified check drawn in favor of "The Finance Officer, U. S. Army, Fort Sam Houston, Texas." (105)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Westover Field, Northeast Air Base, Chicopee Falls, Mass. Sealed bids will be received at this office until 10:00 a.m., Eastern Standard Time, July 9, 1940, and then publicly opened, for *Construction and Completion of Five (5) Air Corps Hangars,* at Westover Field, Northeast Air Base. Plans and specifications may be secured from The Constructing Quartermaster, upon deposit of a certified check in amount of $50.00 payable to The Treasurer of the United States. (108)

U. S. ENGINEER OFFICE, Providence, R. I. Sealed bids, in duplicate, will be received here until 2:00 P.M., D.S.T., July 12, 1940, for *constructing Call Street pumping station* on east bank of Connecticut River at Chicopee, Mass. A deposit of $10 is required for the plans. Further information on request. (123)

FEDERAL WORKS AGENCY, Public Buildings Administration, Washington, D. C., June 17, 1940.—Sealed proposals in duplicate will be publicly opened in this office at 1 P. M., Standard Time, July 24, 1940, for the *extension and remodeling of the U. S. P. O. at Winnemucca, Nev.* Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $7 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Commissioner, to builders' exchanges, chambers of commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Commissioner of Public Buildings, Federal Works Agency. (144)

U. S. ENGINEER OFFICE, Providence, R. I. Sealed bids, in duplicate, will be received here until 3:00 P.M., D.S.T., July 12, 1940, for furnishing the *following equipment for Call Street pumping station* on east bank of Connecticut River at Chicopee, Mass.: Three 36-inch vertical, single-stage, propeller-type pumps complete with discharge piping, couplings and flap valves; three 4-cycle, heavy-duty, stationary-type, internal combustion engines complete with silencers and exhaust piping, for driving the 36-inch pumps; three right-angle gear units for connecting the pumps and gasoline engines; one 16-inch vertical, mixed-flow, volute-type pump complete with electric motor, inlet and discharge piping, gate valves and flap valves. A deposit of $10 is required for the plans. Further information on request. (129)

OFFICE OF CONSTRUCTING QUARTERMASTER, P. C. Dept., Quarry Heights, C. Z. Sealed bids, in triplicate, subject to conditions contained herein will be received until 2 P.M., Eastern Standard Time, July 17, 1940, and then publicly opened for *constructing one Bakery and one Laundry* at Corozal, and *one Bakery and one Laundry* at Mt. Hope (Fort Gulick), C. Z. Bids will be opened simultaneously in (a) New York, office of Constructing Quartermaster, 90 Church Street; (b) San Francisco, Office of Constructing Quartermaster, Fort Mason, and (c) Office of Constructing Quartermaster, Panama Canal Department, Albrook Field, C. Z. Plans and specifications are available from above Constructing Quartermasters upon deposit of certified check made payable to the Treasurer of the United States, in the sum of Seventy-Five Dollars ($75.00). (89)

U. S. ENGINEER OFFICE, Wilmington, N. C. Sealed bids in duplicate will be received until 12 o'clock noon, July 3, 1940, and then publicly opened for furnishing all labor and materials and performing all work for the *dredging of approximately 1,248,200 cubic yards of material* from Roanoke River, N. C. Further information upon application. (122)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Lowry Field, Denver, Colorado. Sealed proposals in triplicate will be received at this office until 2:00 P.M., M.S.T., July 10, 1940, and then publicly opened for *Construction and Completion of reinforced concrete paving and drainage of Runway No. 1,* at this station. Certified check in the amount of $15.00, payable to the Treasurer of the U. S., is required for plans and specifications. Further information on application to this office. (130)

U. S. ENGINEER OFFICE, 3RD FLOOR PARK SQUARE BLDG., BOSTON, MASS. Sealed bids will be received until 11:00 A.M., E.D.S.T., July 2, 1940, for *dredging approximately 86,600 cubic yards, place measurement, of material and removing two steel sheet piling cylinders* from the Annisquam River, Mass.; Invitation No. 175-40-123. Further information upon application. (125)

Proposal for Construction of Caddoa Dam—U. S. ENGINEER OFFICE, *Caddoa, Colorado.*—Sealed proposals for *construction of the Caddoa Dam* on the Arkansas River will be received here until 12:00 noon, M.S.T., July 12, 1940. Work will involve approximately 550,000 c.y. concrete, 990,000 c.y. common excavation, 125,000 c.y. rock excavation, 6,000,000 c.y. earth fill, 220,000 c.y. rock fill, sixteen 30' x 64' Tainter type crest gates, and 12 conduit slide gates in tandem pairs. Successful bidder will furnish all materials except cement. Specifications and bidding papers will be furnished upon application. Plans will be furnished upon deposit in the form of a postal money order or a certified or cashier's check in the amount of $25.00 per set, made payable to the Disbursing Officer, U. S. Engineer Office, Caddoa, Colorado. Additional information will be furnished upon request. (99)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Wright Field, Dayton, Ohio. Sealed proposals will be received at this office until 11:00 a.m., E.S.T., July 2, 1940, and then publicly opened for *construction of one new Engineering Shop Expansion, Repair Dock, Engine Test Building and Spray Pool, and Equipment Repair Building,* at Patterson Field, Ohio. Plans and specifications will be furnished upon deposit of certified check in the amount of $100.00 made payable to Finance Officer, U. S. Army. Information at the above address. (77)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Southeast Air Depot, Mobile, Alabama. Sealed proposals, in triplicate, will be received in this office until 11:00 a.m., C. S. T., June 28, 1940, and then publicly opened, for *Furnishing and Erecting a 300,000 Gallon Elevated Steel Tank, Piping and Accessories,* at the Southeast Air Depot, Mobile, Alabama. Plans and specifications will be furnished upon application to this office accompanied by a certified check in the amount of $10.00 made payable to the Finance Officer, U. S. Army, Fort McPherson, Georgia. (114)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Southeast Air Depot, Mobile, Alabama. Sealed proposals, in triplicate, will be received in this office until 11:00 a.m., C. S. T., June 28, 1940, and then publicly opened, for *Drilling and Testing Two (2) 10" Gravel Wall Wells at the Southeast Air Depot, Mobile, Alabama.* Plans and specifications will be furnished upon application to this office accompanied by a certified check in the amount of $10.00 made payable to the Finance Officer, U. S. Army, Fort McPherson, Georgia. (115)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Southeast Air Depot, Mobile, Alabama. Sealed proposals, in triplicate, will be received in this office until 11:00 a.m., C. S. T. July 2, 1940, and then publicly opened, for Furnishing of Materials, Labor and Equipment for *constructing Eight (8) Buildings at the Southeast Air Depot,* Mobile, Alabama. Plans and specifications will be furnished upon application to this office accompanied by a certified check in the amount of $100.00 made payable to the Finance Officer, U. S. Army, Fort McPherson, Georgia. (116)

BIDS FOR CONSTRUCTION—Constructing Quartermaster Office, Savanna Ordnance Depot, Proving Ground, Illinois. Sealed bids will be received here until 3:00 P.M. (CST) July 2, 1940, and then opened for *construction and completion of concrete pavement.* Deposit of certified check in amount of $15.00 payable to the Treasurer of the United States will be required for plans and specifications. Information above address. (94)

OFFICE OF CONSTRUCTING QUARTERMASTER, Holabird QM Depot, Baltimore, Maryland. Sealed bids will be received here until 2:00 P.M., E.S.T., July 9, 1940, and then opened for *Construction and Completion of Shop Building Ordnance School* at Aberdeen Proving Ground, Maryland. Certified check $50.00 payable to Finance Officer, U. S. Army, Fort McHenry, Baltimore, Maryland, is required as deposit for plans and specifications. Further information on application. (97)

U. S. Government

WAR DEPARTMENT, Office of The Constructing Quartermaster, Hill Field, Ogden, Utah, June 8, 1940. Sealed proposals will be received at this office until eleven (11) o'clock A.M. (M.S.T.) on the 9th day of July, 1940 and then opened for the *furnishing of material and equipment and performing all labor necessary to construct and complete A. C. Operations Hangar and Annexes*, including utilities thereto, at Hill Field, Ogden, Utah, in strict accordance with Specification No. 1587-E and the drawings mentioned therein. Twenty Five Dollars ($25.00) deposit in the form of a certified check made payable to the Treasurer of the United States is required to obtain plans and specifications at the above office. (119)

WAR DEPARTMENT: United States Engineer Office, Galveston, Texas. Sealed bids will be received until 2:00 P. M., July 16, 1940, and then publicly opened for furnishing all labor and materials and performing all work for the *construction of an office building, warehouse, garage, boat basin and steel pile bulkhead* at the Port Lavaca Reservation, Port Lavaca, Texas. Further information on application. (131)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Lowry Field, Denver, Colorado. Sealed proposals in triplicate will be received at this office until 2:00 P. M., M. S. T., July 16, 1940, and then publicly opened for *Construction and Completion of Communications Building* at this station. Certified check in the amount of $20.00, payable to the Treasurer of the U. S., is required for plans and specifications. Further information on application to this office. (141)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Westover Field, Northeast Air Base, Chicopee Falls, Mass. Sealed bids will be received at this office until 10:00 a.m., Eastern Standard Time, July 10, 1940, and then publicly opened, for *Construction and Completion of Central Heating Plant*, at Westover Field, Northeast Air Base. Plans and specifications may be secured from The Constructing Quartermaster, upon deposit of a certified check in amount of $50.00 payable to The Treasurer of the United States. (101)

UNITED STATES ENGINEER OFFICE, NEW YORK DISTRICT, NEW YORK, N. Y., Room 710, 39 Whitehall St., New York, N. Y. Sealed bids will be received until 12:00 Noon, (D.S.T.), July 19, 1940, and then publicly opened, for furnishing all labor and materials and performing all work for *dredging* and satisfactorily disposing of approximately 2,288,560 cubic yards, place measurement, of all material except ledge rock from the *Raritan River, New Jersey*. (149)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 10:00 A.M., Central Standard Time, July 10, 1940, and then publicly opened, for *cleaning and painting existing Illinois Central Railroad Bridge* over Tennessee River at Gilbertsville, Kentucky, including furnishing all labor, materials, tools, scaffolding, sand and sand-blasting equipment, air compressors, and piping necessary for performing the work. Bidding Documents, for which there is no charge, available June 21, 1940, at above office. C. H. Garity, Director of Purchases. (159)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Westover Field, Northeast Air Base, Chicopee Falls, Mass. Sealed bids will be received at this office until 10:00 a.m., Eastern Standard Time, July 18, 1940, and then publicly opened, for Construction and Completion of One (1) Five Hundred Thousand (500,000) Gallon Elevated *Steel Water Tank at Westover Field, Northeast Air Base*. Plans and specifications may be secured from The Constructing Quartermaster, upon deposit of a certified check in amount of $20.00 payable to The Treasurer of the Unuited States. (152)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 1:00 P.M., Central Standard Time, July 3, 1940, and then publicly opened, for furnishing and applying *Bituminous Materials on the Roads, Parking Areas and Paths* on North and South Sides of *Chickamauga Dam* and Access Road to South Side of Dam. Bidding Documents, for which there is no charge, available June 20, 1940, at above office. C. H. Garity, Director of Purchases. (153)

U. S. Government

WAR DEPARTMENT, Office of the Constructing Quartermaster, MacDill Field, Tampa, Florida. Sealed proposals, in triplicate, will be received at this office until 2:00 P.M., E.S.T., July 19, 1940, and then publicly opened, for *furnishing and erecting 500,000 Gallon Elevated Steel Tank, Piping and Accessories* at MacDill Field, Tampa, Florida. Plans and specifications may be obtained at the above office, accompanied by a certified check in the amount of $5.00. Check made payable to the Finance Officer, U.S. Army, Fort McPherson, Georgia. (157)

FEDERAL WORKS AGENCY, Public Roads Administration, Washington, D. C., June 19, 1940. SEALED BIDS will be received at the office of the Public Roads Administration, Room 123, Winder Building, 17th and F Streets, N. W., Washington, D. C., until 11 o'clock a.m., E.S.T., July 18, 1940, for the *construction of a reinforced concrete structure with stone facing* carrying the Parkway over Route U.S. 250 together with the approaches, the relocation of Route U.S. 250 and other work. Project 1B2, Blue Ridge Parkway. Length: 50 feet Clear Span—Project 0.270 miles. Nelson and Augusta Counties, Virginia. The approximate quantities of the more important items are as follows: 19,300 cu.yd. excavation; 3,000 tons dry stone or slag base course; 3,950 gal. asphalt; 1,250 cu.yd. cement concrete; 129,000 lb. reinforcing steel; 1,390 cu.yd. stone masonry. Minimum rates of wages for laborers and mechanics on this project have been fixed by the Secretary of Labor as required by law. Where plans and specifications are requested, a deposit of $10.00 in cash, or preferably a certified check for $10.00 which must be made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the office of the District Engineer, Public Roads Administration, Room 123 Winder Building, 17th and F Streets, N. W., Washington, D. C. Bid forms may be obtained and plans and specifications seen at the office of the Public Roads Administration, Waynesboro, Virginia. H. J. Spelman, District Engineer. (163)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 11:00 A.M., Central Standard Time, July 15, 1940, and then publicly opened, for furnishing, fabricating, selling and delivering *Structural Steel Intake Gate Rail Support Towers* for Kentucky Project. There will be approximately 425 tons of structural steel involved in this contract. Bidding Documents, for which there is no charge, available June 24, 1940, at above office. C. H. Garity, Director of Purchases. (158)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 10:00 A.M., Central Standard Time, July 12, 1940, and then publicly opened, for furnishing *Trash Racks for Penstock Intakes and Skimming Screens* for Wheeler Dam, Units 3 and 4. There will be approximately 144 tons of steel involved in this contract. Bidding Documents, for which there is no charge, available June 24, 1940, at above office. C. H. Garity, Director of Purchases. (160)

BIDS FOR CONSTRUCTION—Constructing Quartermaster Office, Savanna Ordnance Depot, Proving Ground, Illinois. Sealed bids will be received here until 3:00 P.M. (CST) July 11, 1940, and then opened for *construction and completion of Standard Gauge Railroad Track*. Deposit of certified check in amount of $15.00, payable to the Treasurer of the United States, will be required for plans and specifications. Information above address. (170)

Sealed bids for the *construction of a Radio Transmitter Building* at Miami Municipal Airport, Miami, Florida, will be received at the office of the Constructing Quartermaster, Chapman Field, Miami, Florida, until 10 o'clock A.M. E.S.T., July 23rd, 1940, and then opened. Further information on application. (151)

BIDS FOR CONSTRUCTION—Constructing Quartermaster Office, Savanna Ordnance Depot, Proving Ground, Illinois. Sealed bids will be received here until 3:00 P.M. (CST) July 9, 1940, and then opened for *construction and completion of 63 and 85 Underground Magazines*. Deposit of certified check in amount of $25.00 payable to the Treasurer of the United States will be required for plans and specifications. Information above address. (172)

U. S. Government

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 10:00 A.M., Central Standard Time, July 16, 1940, and then publicly opened, for furnishing *Steel Superstructure* for L.C.R.R. Bridge over Navigation Lock at Kentucky Dam. There will be approximately 496 tons of material involved in this contract. Bidding Documents, for which there is no charge, available June 25, 1940, at above office. C. H. Garity, Director of Purchases. (162)

FEDERAL WORKS AGENCY, Public Buildings Administration, Washington, D. C., June 21, 1940. Sealed proposals in duplicate will be publicly opened in this office at 1 P.M., Standard Time, July 23, 1940, for *remodeling of the U. S. P. O. at Kansas City, Mo.* Upon application, two sets of drawings and specifications will be supplied free to each general contractor interested in submitting a proposal. The above drawings and specifications MUST be returned to this office. Contractors requiring additional sets may obtain them by purchase from this office at a cost of $7 per set, which will not be returned. Checks offered as payment for drawings and specifications must be made payable to the order of the Treasurer, U. S. Drawings and specifications will not be furnished to contractors who have consistently failed to submit proposals. One set upon request, and when considered in the interests of the Government, will be furnished, in the discretion of the Commissioner, to builder's exchanges, chambers of Commerce or other organizations who will guarantee to make them available for any sub-contractor or material firm interested, and to quantity surveyors, but this privilege will be withdrawn if the sets are not returned after they have accomplished their purpose. W. E. Reynolds, Commissioner of Public Buildings, Federal Works Agency. (164)

WAR DEPARTMENT, Office of the Constructing Quartermaster, Chanute Field, Rantoul, Illinois. Sealed proposals will be received at this office until 12:00 Noon, Central Standard Time, July 9, 1940, and then publicly opened for the *construction and completion of Paved Aprons and Drainage at Chanute Field, Rantoul, Illinois*. Plans and specifications will be furnished upon receipt of certified check for twenty-five dollars ($25.00) made payable to the Treasurer of the United States. (165)

WAR DEPARTMENT, Office of the Constructing Quartermaster, MacDill Field, Tampa, Florida. Sealed proposals, in triplicate, will be received at this office until 2:00 P.M., E.S.T., July 23, 1940, and then publicly opened, for *construction and completion of Five (5) Single Field Officers' Quarters* at MacDill Field, Tampa, Florida. Plans and specifications may be obtained at the above office, accompanied by a certified check in the amount of $10.00. Check made payable to the Finance Officer, U.S. Army, Fort McPherson, Georgia. (166)

BIDS FOR CONSTRUCTION—Constructing Quartermaster Office, Savanna Ordnance Depot, Proving Ground, Illinois. Sealed bids will be received here until 3:00 P.M. (CST) July 10, 1940, and then opened for *construction and completion of 44 Standard Ammunition Magazines*. Deposit of certified check in amount of $25.00 payable to the Treasurer of the United States will be required for plans and specifications. Information above address. (171)

TENNESSEE VALLEY AUTHORITY, KNOXVILLE, TENNESSEE. Sealed bids, in duplicate, will be received until 2:00 P.M., Central Standard Time, July 15, 1940, and then publicly opened, for furnishing, fabricating, selling and delivering *Handrailing for Lock at Kentucky Dam*. There will be approximately 36.5 tons of material involved in this contract. Bidding Documents, for which there is no charge, available June 24, 1940, at above office. C. H. Garity, Director of Purchases. (173)

WAR DEPARTMENT, Office of the Constructing Quartermaster, San Antonio, Texas and Vicinity, Fort Sam Houston, Texas. Sealed proposals will be received at this office until 11 A.M., C.S.T., July 18, 1940 and then publicly opened, for *construction and completion of Engine Test Building and Spray Pool (Superstructure)*, Duncan Field, Texas. Plans and specifications will be furnished upon deposit of $25.00, certified check drawn in favor of "The Finance Officer, U. S. Army, Fort Sam Houston, Texas." (161)

OFFICIAL PROPOSALS

Bids: July 25 (167)

Housing Project

The Housing Authority of the City of Pawtucket, R. I. will receive sealed bids until 11:00 A.M. (E.D.S.T.) on July 25, 1940, at the office of the City of Pawtucket Housing Authority, City Hall, Pawtucket, Rhode Island, and bids so received will, at said time, be publicly opened and read aloud in the Council Chamber, City Hall, Pawtucket, R. I. Bids will be received for furnishing all labor and materials required for constructing and finishing complete a low rent Housing Project designated R. I. -2-1. The project consists of 226 dwelling units comprising 25 buildings, one combined Administration Building and Boiler House, and will include general construction work, lawns, and planting, site improvements, plumbing, heating (including steam distributing system), electrical work and yard lighting, demolition of existing buildings on site, and all other work necessary for or incidental to completion of the project.

The successful bidder will be required to furnish satisfactory performance and payment bond as set forth in the specifications.

Attention is called to the fact that not less than the minimum wage rates as set forth in the specifications must be paid on this project.

Proposed forms of contract documents, including plans and specifications, are on file at the office of the City of Pawtucket Housing Authority at the City Hall, Pawtucket.

Copies of the documents may be obtained by depositing $100.00 with the City of Pawtucket Housing Authority for each set of documents so obtained. The amount of the deposit will be refunded to each person who returns the plans and documents in good condition within 10 days after the opening of bids.

The City of Pawtucket Housing Authority reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or bank draft payable to the City of Pawtucket Housing Authority, U. S. Government Bonds, or a satisfactory bid bond executed by the bidder and a surety company, in an amount equal to three per cent (3%) of the bid shall be submitted with each bid.

No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of the City of Pawtucket Housing Authority.

Housing Authority of the City of Pawtucket
William L. Connolly, Chairman

R. I.-2-1
(Project No.)
June 28, 1940

Bids: July 30 (156)

Housing Project

The Detroit Housing Commission will receive sealed bids for all construction work on the S. James Herman Gardens Housing Project including building construction, electrical, plumbing, heating, site improvement and lawns and planting, except as covered in previous contracts, until 2:00 P.M. Eastern Standard Time July 30, 1940, at the Housing Commission's offices on the 17th floor of the Water Board Building, Detroit, State of Michigan, at which time all bids will be publicly opened and read aloud in Room 500 of said Water Board Building.

Bids will be submitted for the following:

(1) Base Bid #1: For the construction of the entire project using the so-called Masonry Design.

(2) Base Bid #2: For the construction of the entire project using the so-called Light Steel Design.

In addition to the General Base Bids #1 and #2, proposals on the following parts of the work will be requested from Municipal Departments.

(1) Lawns & Planting Work.
(2) Sidewalks.

The Contractor may submit a figure for the work included in either or both Base Bid #1 or Base Bid #2.

The successful bidder will be required to furnish satisfactory performance and payment bond or bonds.

Municipal Departments, if the low bidder on any division of the work, will be required to obtain the adoption of a Resolution by the Common Council of the City of Detroit which will provide similar guarantees.

Attention is called to the fact that not less than the minimum wage rates as set forth in the specifications must be paid on this project.

Copies of forms of contract documents, including plans and specifications, are on file and may be secured at the office of the George D. Mason Associates at 409 Griswold Street, Detroit, Michigan.

Up to three complete copies of documents may be obtained by contractors bidding on the base bids on or after June 22, 1940, by depositing Seventy-Five ($75.00) Dollars in the form of a certified check made payable to George D. Mason Associates, for each set of documents so obtained. The full amount of the deposit will be refunded upon the return of these documents in good, usable condition within ten (10) days after date of bid opening. If documents are returned improperly bound or otherwise damaged so as to be unusable, no claim for refund will be honored.

The drawings will be bound into six sections as hereinafter listed and blue prints of each section of the work with specifications covering all trades and including all notices, bidding forms, bond requirements, general conditions, etc., may be obtained separately at the Architect's office by making a deposit in the form of a certified check payable to the Architect as follows:

Section	Contents	Deposit Req'd
#1	Survey Sheets	$5.00 per set
#2	Architectural Sheets	50.00 " "
#3	Utility & Site Improvement Sheets	10.00 " "
#4	Structural Sheets	25.00 " "
#5	Mech. Sheets showing Electrical, Heating & Plumbing Work	25.00 " "
#6	Planting Layout Sheets	10.00 " "
	Specifications for all work	15.00 " "

No refund will be made on separate section sets of plans or specifications unless they are returned in an undamaged and reusable condition within two weeks from date issued except that Section #5 may be retained for the complete bidding period.

Single prints or portions of sets of plans may be obtained at the Architect's office at the cost of twenty-five ($.25) cents per sheet payable in cash or check. No refund will be made on such sheets.

The Detroit Housing Commission reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check, bank draft, bid bond or government bonds payable to the City Treasurer in an amount equal to two and one-half (2½%) per cent of the bid shall be submitted with each bid.

No bid shall be withdrawn for a period of forty-five (45) days subsequent to the opening of bids without the consent of the Detroit Housing Commission.

DETROIT HOUSING COMMISSION
By George Edwards
Director-Secretary

Date June 20, 1940

Bids: July 11 (169)

Subway

CITY OF CHICAGO DEARBORN STREET SUBWAY
CONTRACT D-6A.

Sealed bids, endorsed "PROPOSAL FOR DEARBORN STREET SUBWAY, CONTRACT D-6A" will be received by the City of Chicago, in the County of Cook and State of Illinois, at the office of the Commissioner of Subways and Superhighways, Room 1940, 20 N. Wacker Drive, Chicago, Illinois, until 1 o'clock P.M., Central Standard Time (being 2 o'clock P.M., Chicago Daylight Saving Time), on Thursday, July 11th, 1940, at which place and time all such proposals will be opened publicly and read aloud by a representative of the Commissioner of Subways and Superhighways.

The work for which such proposals are invited consists of building a pumping station, ventilating shaft, emergency exits, fan chambers, air intakes, cable shaft and electrical room together with miscellaneous work appurtenant and collateral to all the foregoing, as specified in the Contract Documents and shown on the plans. Most of the structures to be built under this contract are to be constructed in open cut and are to connect with certain subways structures built or to be built as shown on the plans. The work is located in W. Lake Street and N. Milwaukee Avenue, in the City of Chicago, as described in more detail in the Requirements for Bidding and Instructions to Bidders.

All bids must be made upon blank forms of proposal as furnished by the Commissioner of Subways and Superhighways and included in the Contract Documents, and shall be made in accordance with the provisions contained in said documents.

The successful bidder will be required to furnish, execute, and deliver to the Commissioner of Subways and Superhighways, a performance bond satisfactory to the Commissioner of Subways and Superhighways in the amount and within the period of time set out in the Contract Documents.

The Contract Documents, including Standard Specifications for Subway Construction, Contract Requirements and Contract Plans, are on file and available to bidders at the office of the Commissioner of Subways and Superhighways at Room 1940, 20 N. Wacker Drive, Chicago Illinois. Copies of the Contract Documents may be obtained by depositing Twenty-five Dollars ($25.00) with the Commissioner of Subways and Superhighways, for each set of documents. The amount of the deposit for one set of documents will be refunded to each actual bidder who returns the said documents in good condition within ten (10) calendar days after the opening of bids. Fifteen Dollars ($15.00) will be refunded for each of all other sets of documents so returned.

The Commissioner of Subways and Superhighways has issued a "Standard Specifications for Subway Construction," dated February, 1940. A copy of these specifications will be issued to each prospective bidder obtaining copies of the Contract Documents.

The Commissioner of Subways and Superhighways (formerly the Commissioner of Subways and Traction) has issued a "Manual of Paints and Other Coatings for Subway Structures" pertaining to certain work required under the contract. The original and copies thereof are on file at the office of the Commissioner and are available for examination by prospective bidders.

There shall be paid each employee engaged in work on the Project under this contract not less than the general prevailing rate of per diem wages and the general prevailing rates for legal holiday and overtime work ascertained and prescribed in accordance with the provisions of "AN ACT regulating wages of laborers, mechanics and other workmen employed under contracts for public works," filed July 26, 1939, which rates are fully set forth in said Contract Documents and herewith are incorporated by reference in this advertisement for bids the same as if such rates were completely set out herein in verbatim form.

Each proposal must be accompanied by cash or certified check drawn on some responsible bank doing business in the city of Chicago, in the amount of Eight Thousand Dollars ($8,000.00) payable to the order of the City of Chicago. Any proposal submitted without being accompanied by such cash or certified check may be considered informal and consequently may be rejected.

The City of Chicago reserves the right to reject any or all bids and to disregard any informalities in the bids and bidding.

No bid may be withdrawn, after the scheduled closing time for receipt of bids, for at least forty-five (45) calendar days.

CITY OF CHICAGO,
By PHILIP HARRINGTON,
Commissioner of Subways and Superhighways.
Chicago, Illinois, June 25, 1940.

Notice to Advertisers

Because of the Holiday, Independence Day, July 4th, the "Searchlight" pages of the

JULY 4th ISSUE OF

ENGINEERING NEWS-RECORD

close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy, or changes of copy, to reach us accordingly.

FINAL CLOSING TIME
Display and Undisplayed Ads:

Friday 10 A.M., June 28th

Official Proposals:

Monday 4 P.M., July 1st

OFFICIAL PROPOSALS

Bids: July 11 (168)

Subway Structures

RE-ADVERTISEMENT FOR BIDS DATED JUNE 25, 1940.
CITY OF CHICAGO STATE STREET SUBWAY.
CONTRACT S-9B.

Sealed bids, endorsed "PROPOSAL FOR STATE STREET SUBWAY, CONTRACT S-9B" will be received by the City of Chicago, in the County of Cook and State of Illinois, at the office of the Commissioner of Subways and Superhighways, Room 1940, 20 N. Wacker Drive, Chicago, Illinois, until 1 o'clock P.M., Central Standard Time (being 2 o'clock P.M., Chicago Daylight Saving Time), on Thursday July 11th, 1940, at which place and time all such proposals will be opened publicly and read aloud by a representative of the Commissioner of Subways and Superhighways.

The work for which such proposals are invited consists of building a mezzanine station, pumping stations, ventilating shafts, emergency exits, fan chambers and a loading platform, together with miscellaneous work appurtenant and collateral to all the foregoing, as specified in the Contract Documents and shown on the plans. Most of the structures to be built under this contract are to be constructed in open cut and are to connect with certain subway structures built or to be built as shown on the plans. The work is located in N. Clybourn Avenue, W. Division Street and N. State Street, and in private right-of-way, in the City of Chicago, as described in more detail in the Requirements for Bidding and Instructions to Bidders.

All bids must be made upon blank forms of proposal as furnished by the Commissioner of Subways and Superhighways and included in the Contract Documents, and shall be made in accordance with the provisions contained in said documents.

The successful bidder will be required to furnish, execute, and deliver to the Commissioner of Subways and Superhighways, a performance bond satisfactory to the Commissioner of Subways and Superhighways in the amount and within the period of time set in the Contract Documents.

The Contract Documents, including Standard Specifications for Subway Construction, Contract Requirements and Contract Plans, are on file and available to bidders at the office of the Commissioner of Subways and Superhighways at Room 1940, 20 N. Wacker Drive, Chicago, Illinois. Copies of the Contract Documents may be obtained by depositing Twenty-five Dollars ($25.00) with the Commissioner of Subways and Superhighways, for each set of documents; Provided, however, any prospective bidder who obtained copies of the Contract Documents which were issued prior to June 20, 1940, and who have returned certain sets of such documents and received from the City of Chicago the specified refund of Fifteen Dollars ($15.00) for each of such sets of Contract Documents so returned, may obtain the reissued sets of the Contract Documents by depositing Fifteen Dollars ($15.00) for each reissued set, up to the number of sets returned in conformity with the above. The amount of the deposit for one reissued set of such documents will be refunded to each actual bidder who returns the said documents in good condition within ten (10) calendar days after the opening of bids. Fifteen Dollars ($15.00) will be refunded for each of all other sets of reissued documents so returned.

The Commissioner of Subways and Superhighways has issued a "Standard Specifications for Subway Construction," dated February 1940. A copy of these specifications will be issued to each prospective bidder obtaining copies of the Contract Documents.

The Commissioner of Subways and Superhighways (formerly the Commissioner of Subways and Traction) has issued a "Manual of Paints and Other Coatings for Subway Structures" pertaining to certain work required under the contract. The original and copies thereof are on file at the office of the Commissioner and are available for examination by prospective bidders.

There shall be paid each employee engaged in work on the Project under this contract not less than the general prevailing rates of per diem wages and the general prevailing rates for legal holiday and overtime work ascertained and prescribed in accordance with the provisions of "AN ACT regulating wages of laborers, mechanics and other workmen employed under contracts for public works," filed July 26, 1939, which rates are fully set forth in said Contract Documents and herewith are incorporated by reference in this advertisement for bids the same as if such rates were completely set out herein in verbatim form.

Each proposal must be accompanied by cash or a certified check drawn on some responsible bank doing business in the city of Chicago, in the amount of Twenty Thousand Dollars ($20,000.00) payable to the order of the City of Chicago. Any proposal submitted without being accompanied by such cash or certified check may be considered informal and consequently may be rejected.

The City of Chicago reserves the right to reject any or all bids and to disregard any informalities in the bids and bidding.

No bid may be withdrawn, after the scheduled closing time for receipt of bids, for at least forty-five (45) calendar days.

CITY OF CHICAGO,
By PHILIP HARRINGTON,
Commissioner of Subways and Superhighways.
Chicago, Illinois, June 25, 1940.

Bids: July 3 (111)

State Highway Work

Sealed proposals will be received by the State Highway Department at its office, Dover, Del., until 2:00 P. M. E. S. T. July 3, 1940, and at that time and place publicly opened for contracts involving the following approximate quantities:

CONTRACT 730

Delaware Avenue & 10th Street, Wilmington
Widening & Reconstruction
New Castle County
0.703 Miles
Federal Aid Project

800	Cu. Yds. Unclassified Excavation
4,500	Tons Selected Sub-base Material
25,350	Sq. Yds. Bituminous Concrete Surface Course
80	Tons Bituminous Concrete Surface Course
25,500	Sq. Yds. Cement Concrete Base Course with crack control
6,500	Lin. Ft. Cement Concrete Curb
180	Lin. Ft. Type "A" Inlet Curbing
3,200	Sq. Ft. 4" Cement Concrete Sidewalk
14,800	Sq. Ft. 4" Cement Concrete Sidewalk (replacement)
1,000	Sq. Ft. 6" Cement Concrete Sidewalk (replacement)
2,500	Sq. Ft. Brick Sidewalk (replacement)
24,550	Sq. Yds. Removal of Present Concrete Pavement
2,600	Lin. Ft. Cement Concrete Center Line Header Curb
200	Lin. Ft. Resetting Stone Curb
600	Bags Portland Cement

These contracts will come under the provisions of the regular Federal Highway Act, as amended.

The Employment Agency for contracts in New Castle County shall be the Employment Service Division of the Unemployment Compensation Commission, at 601 Shipley Street, Wilmington, Delaware; in Kent County, the Employment Service Division of the Unemployment Compensation Commission, Dover, Delaware; and in Sussex County, the Employment Service Division of the Unemployment Compensation Commission, Georgetown, Delaware. The minimum wages paid will be: for New Castle County, skilled labor 80c per hour; intermediate grade labor 50c per hour, and unskilled labor 35c per hour; for Kent and Sussex Counties, skilled labor 70c per hour; intermediate grade labor 40c per hour, and unskilled labor 30c per hour.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for 90 per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No....."

The contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained after June 19, 1940, upon receipt of two dollars ($2.00) for each contract, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: F. V. duPont, Chairman.
W. W. Mack, Chief Engineer.
Dover, Delaware.
June 6, 1940.

Bids: July 5 (174)

Concrete Pavement

The city of Vinita, Oklahoma, will receive bids until July 5th for construction of 20,000 sq. yds. concrete pavement. Address communications to: C. H. Webb, City Clerk.
F. C. Settle, City Engineer

How You Can Use the ENGINEERING NEWS-RECORD CONSTRUCTION DAILY in your sales promotion

—to help your salesmen sell more

—to sell direct where salesmen cannot reach

—to advertise continuously when buyers are most interested

—to spot your most important prospects for special attention

—to direct your sales force to the most active territories

For only $10 per month you get daily reports on the most desirable business in the construction market. Order your service to start now—

Business News Dept.
Engineering News-Record
330 W. 42nd St., New York, N. Y.

(For additional Proposal advertising see page 32)

EMPLOYMENT OPPORTUNITIES

RATE: 10 CENTS A WORD, MINIMUM CHARGE $2.00 PER INSERTION

Positions Wanted (full or part-time salaried employment only), ½ the above rates, payable in advance.

Box Numbers in care of any of our New York, Chicago or San Francisco offices count 10 words additional in undisplayed ads.

Discount of 10% if one payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

Copy for new advertisements received until 10 A. M. Friday for Thursday's issue.

CIVIL SERVICE OPPORTUNITIES

State of New York—Department of Civil Service
State, County, and Village Service
July 27, 1940

When writing for detailed circular and application form specify number and title of position and enclose a 3⅞" x 9" or larger self-addressed return envelope bearing 6¢ postage. Address request to the Examinations Division, State Department of Civil Service, Albany, N. Y.

Application forms may not be issued by mail after July 8 for written examinations and after July 25 for unwritten ones. Applications, together with the required fee, should be filed or post marked on or before July 9 for written examinations and July 26 for unwritten ones.

State Written Examinations

90. Bridge Superintendent, New York State Bridge Authority. Salary varies. Appointment expected at $5000. Application fee $4.00. Maximum age 50 years.

91. Chief Grade Separation Engineer, Department of Public Service. Usual salary range $6700 to $8200. Application fee $5.00. Appointment expected at the minimum but may be made at less than $6700.

97. Junior Camp Sanitarian, Division of Sanitation, Department of Health. Several seasonal appointments expected at $150 a month. Application fee $1.00.

104. Senior Sanitary Chemist, Division of Laboratories and Research, Department of Health. Salary range $3120 to $3870. Application fee $3.00. Appointment may be made at less than $3120.

County Written Examination
(Open only to residents of Onondaga County)

116. Analyst, Ley Creek Sewage Treatment Plant, Onondaga Public Works Commission, Onondaga County. Salary varies. Appointment expected at $1800. Application fee $1.00.

117. Assistant Operator, Ley Creek Sewage Treatment Plant, Onondaga Public Works Commission, Onondaga County. Salary varies. Several appointments expected at $2000. Application fee $1.00.

119. Chief Operator, Ley Creek Sewage Treatment Plant, Onondaga Public Works Commission, Onondaga County. Salary varies. Appointment expected at $3600. Application fee $3.00. **Examination open to residents of any county in New York State, but preference in certification given to legal residents of Onondaga County.**

POSITION VACANT

STRUCTURAL ENGINEER with at least three years experience in detailing, estimating, designing structural steel. Engineering graduate preferred who might develop into sales work and customer contacts. Location middle west with fabricating shop 1000 tons per month capacity. P-373, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

POSITION VACANT

HYDRAULIC ENGINEER wanted, experienced, practical, for Venezuela, able to install complete water works systems. Excellent opportunity for responsible graduate engineer. The Star Drilling Machine Company, Akron, Ohio.

POSITIONS WANTED

FOREMAN OR SUPERVISING FOREMAN experienced Machine Excavations, Foundations, Steel Concrete placing, Bridges, Piers, Power, Industrial Plants, Location immaterial. PW-308, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

ACCOUNTANT, ESTIMATOR, building construction, New York experience, good office executive, location immaterial. Montgomery, 40 N. 20th St., East Orange, N. J.

CIVIL ENGINEER, graduate, 30 years experience, design, construction, power plants, industrial plants, water supply, hydro-electric developments. PW-316, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

YOUNG CIVIL ENGINEER: Experienced Estimator, Drafting, Layout, Supervision, Construction of all types, possesses large collections of labor costs breakdowns. Desires position where salary is secondary to advancement and permanency. PW-364, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

SUPERINTENDENT 28 years experienced Bridges, Harbor work, Dams, Reservoirs, Sewage disposal plant, pipe lines, and all heavy Engineering Construction. PW-348, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

SUPERINTENDENT—Excellent record as good organizer and aggressive supervisor in building and heavy construction business in Eastern States and Tropical countries. PW-369, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

CONSTRUCTION ENGINEER, graduate, registered, 16 years experience, municipal, government and consulting inspection, sewage disposal. Capable preliminary surveys, layout and general supervision large projects. Qualified estimating, design. Desires permanent connection with contractor or consulting engineer. Available August 1. Location middle west preferred. PW-353, Engineering News-Record, 550 N. Michigan Ave., Chicago, Ill.

IRRIGATION ENGINEER, 25 years experience in design, construction and operation of large irrigation systems; operation of pumping units and general maintenance. Design of concrete pipe systems for irrigation, construction of pipe and installation. Construction of sanitary and storm sewer systems. Licensed engineer. Latin American experience. Available after August first. PW-367, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

POSITIONS WANTED

DRAFTSMAN—Victor S. Veazey, Pratt, W. Va.

CARPENTER FOREMAN SUPERINTENDENT. 25 years experience all types of heavy construction—concrete forms. Steel placing — bridges — and industrial disposal plants. PW-384, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

CONSTRUCTION ENGINEER, 25 years experience estimator, manager and supervisor of competitive and fee contracts, and industrial design, buildings and general construction. Responsible, pusher and with record of profit. Available now. PW-385, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

CONTRACTOR'S ENGINEER — Estimator, graduate, 15 years experience all phases of engineering and construction work; forty; married; employed. Seeks connection firm with plenty of business and needs good help. Correspondence invited. PW-386, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CIVIL ENGINEER, graduate, 11 years experience, location. Construction, earthwork, waterways, power lines. Drainage. PW-387, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CIVIL ENGINEER, graduate, M.A.S.C.E. New York State license. 25 years experience in design of all branches of steel and concrete structures. Handled successfully large projects, capable to effect considerable savings by skillful design. Has initiative, ingenuity and sound judgment. Can furnish best references. PW-388, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

SUPERINTENDENT—construction. Resourceful organizer accustomed to large responsibility in planning and directing operations of magnitude costing millions. All types, diversified construction. Representative concerns can testify to past connections and accomplishments. Now employed, nearing completion. PW-389, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

ENGINEER INSPECTOR or Superintendent of Construction, College, registered Engineer, Age 47. 26 years experience charge of Engineering and Construction. Past 12 years Engineer Inspector supervising construction, State and Government buildings, New York World's Fair, and PWA Projects. Available immediately, location anywhere. PW-383, Engineering News-Record, 330 W. 42nd St., New York, N. Y.

BUILDING ESTIMATOR—with over fifteen years general contractors experience intake offs. piecing and bidding State, Federal and Private work. Experience also covers expediting and misc. routine. PW-391, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CONSTRUCTION SUPERINTENDENT, years of experience. Harbors, Sea walls, Docks, Bridges, Intakes, Submarine operations, Deep Foundations. Marine Equipment, Hydraulic and Dipper Dredging. Broad background and a real producer. Location immaterial. PW-392, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

Make Plans Accessible to Distant Bidders

Plans and specifications for inspection by distant bidders may be filed at any of *Engineering News-Record* offices (without charge). Or a sufficient supply may be deposited at such of our offices as seem desirable, subject to your usual requirements in the matter of deposits, etc. (We assume full responsibility for return of plans or deposits). Therefore, Contractors in all parts of the country can bid with equal convenience on contracts advertised in *Engineering News-Record.*

OFFICIAL PROPOSALS

Bids: July 9 (134)

Excavating

NEW YORK STATE DEPARTMENT OF PUBLIC WORKS—Sealed proposals, in duplicate, will be received by the Chief Engineer, Department of Public Works, State Office Building, Albany, New York, until 2 P.M., Eastern Daylight Saving Time, Tuesday, July 9, 1940, and then opened, for excavating at various locations in the Barge Canal between Lock No. 13 at Yosts and Lock No. 16 at Mindenville, Montgomery county, New York, Contract U.S.-25. Additional information on application.

ARTHUR W. BRANDT,
Superintendent of Public Works.
Dated June 13, 1940.

Bids: July 8 (142)

Alterations and Additions to School

BOARD OF TRUSTEES,
COMMON SCHOOL DISTRICT
NO. SEVEN (7)
DEER PARK, TOWN OF BABYLON,
SUFFOLK COUNTY,
STATE OF NEW YORK

SEPARATE SEALED BIDS for the following Works, as required in connection with the ALTERATIONS AND ADDITIONS to the Present GRADE SCHOOL BUILDING at DEER PARK, will be received by the BOARD OF TRUSTEES, at the Present School Building, between the hours of Six and Eight o'clock P. M., Daylight Saving Time, on the 8th day of July, 1940 and then at said School Building publicly opened and read aloud.

CONTRACT NO. 1. GENERAL CONSTRUCTION WORK
CONTRACT NO. 2. PLUMBING, HEATING AND VENTILATING WORK
CONTRACT NO. 3. ELECTRIC WORK

The Information for Bidders, Form of Bid, Form of Contract, Plans and Specifications, may be examined at the office of:—

HUGO H. AVOLIN, ARCHITECT,
WYANDANCH, L. IS., N. Y.

and copies thereof may be obtained on payment of $25.00 for Contract No. 1 and No. 2, and $15.00 for Contract No. 3, for which a refund of $20.00 for Contracts Nos. 1 and 2, and $10.00 for Contract No. 3, will be made on return of Plans and Specifications in GOOD CONDITION, without any Marks, Notations, Stamps, Mutilations, Etc., promptly, no later than 5 days after opening of Bids.

CONTRACTORS who do not submit a formal bid and return the plans, specifications and documents, in Perfect Condition, will have one-half of their deposit returned; the other half will be retained by the Architect to defray expenses.

The Board of Trustees reserves the right to waive any and all informalities in or to reject any or all bids, or to accept that BID which in their judgment is for the Best Interest of the School District.

Each Bidder must deposit with his Bid, Security in an amount of not less than five percentum (5%) of the Base Bid, in the form and subject to the conditions provided in the Information for Bidders.

Attention of Bidders is particularly called to the requirements as to conditions for Employment to be observed, and minimum Wage rates to be paid under the Contract.

No bidder may withdraw his Bid within 45 days after the actual date of the opening thereof.

With his executed Contract the successful Bidder must deliver to the Board of Trustees an executed Performance Bond with Labor and Materialmen's clauses, in form meeting the Boards' approval, and in amount not less than one hundred percentum (100%) of the accepted bid as security for the faithful performance of his contract and for the payment of all persons performing labor or furnishing materials in connection therewith, and having as Surety on the Bond, such Surety Companies as are acceptable to the Board.

PLANS AND SPECIFICATIONS
will be ready
June 20, 1940

By order of the Board of Trustees
Common School District No. Seven (7)
Deer Park, Town of Babylon,
Suffolk County, State of New York
Josephine Trabona, Clerk.
Dated, June 11, 1940.

Bids: July 10 (137)

State Highway Work

STATE DEPARTMENT OF
PUBLIC WORKS
DIVISION OF HIGHWAYS
ALBANY, N. Y.

Sealed proposals will be received by the undersigned at the State Office Building, 13th Floor, Albany, N.Y., until one o'clock p.m., advanced standard time, which is twelve o'clock noon eastern standard time, on WEDNESDAY, JULY 10, 1940, for the construction and reconstruction of highways and bridges, and railroad grade crossing elimination projects, in the counties mentioned below:

CONSTRUCTION

County	Deposit for plans	Bid Deposit	Type	Approx. Miles
Hamilton..	$10	$7,000	16' Bit. Sand Mulch.....	3.90
Orleans....	5	3,500	18' Graded Gravel Double Surf. Treated.....	2.75
Suffolk....	10	7,000	Two 24½' lanes col. concrete 8"; Grading and misc. work. Elimination structure 71½' stone faced rigid frame.....	0.30
Washington	10	9,500	20' Graded Gravel, Double Surface Treated including twin box Brs. 12' x 10', 10' x 8'; 12' x 8'.....	2.64

RECONSTRUCTION

Cayuga....	5	9,000	33' Concrete 8" 33'—40' M.M. 3.....	2.33
Chemung..	5	3,500	140' truss; 20' M.M. 3 Appr.....	0.26
Orange....	10	32,500	Two 23' lanes concrete 9" & 45' & Var. concrete 9" Roadside Improvement....	4.52
Orange & Rockland.	5	800	Painting Bridges.....	....
Rensselaer.	5	4,000	44 M.M. 3.....	0.72
Seneca....	5	8,000	44 Concrete 8".....	1.59

RAILROAD GRADE CROSSINGS ELIMINATIONS

Dutchess... (Also reconstruction)	10	17,500	22' 44 Conc. 8" I-Beam elim. struct. over N. Y. C. R.R.—Three 66' spans....	0.96
Erie.....	5	9,000	13' Conc. widen 8", 44' conc. 8" (APPR.) Elim. structure, I-Beams, Two 59' & One 48' span.....	0.35

Maps, plans, specifications, and estimates may be seen and proposal forms obtained at the office of the Division of Highways, Albany, N. Y., and at the office of the District Engineers in whose district the roads or projects are located.

The deposit for Plans and Proposal Forms for each contract containing 1 to 15 sheets is $5.00; 16 to 30 sheets, $10.00; over 30 sheets, $20.00. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, in similar period, will be 50% of deposit.

Standard Specifications are Two Dollars ($2.00) per copy.

Plans and proposal forms may also be seen at the office of the State Department of Public Works, State Office Building, Worth and Center Streets, New York City. The addresses of the District Engineers and counties will be furnished on request. Special attention of bidders is called to "General Information for Bidders" in the proposal, specifications, and contract agreement. The attention of bidders is also directed to the special provisions applying to projects financed with federal funds.

Proposal for each highway or contract must be submitted in a separate sealed envelope with the name and number of the highway plainly endorsed on the outside of the envelope. Each proposal must be accompanied by cash, draft or certified check payable to the order of "State of New York, Division of the Treasury," for the sum as specified in the advertisement for proposals and the proposal itself for each project. The retention and disposal of such cash, draft or check by the State Division of Highways shall conform with Sub. 2, Section 38 of the Highway Law, as amended, and Section 127 of the State Finance Law, as amended. The successful bidder will be required to execute the contract and comply in all respects with Section 38 of the Highway Law, as amended, and also pursuant to the provisions of Chapter 707 of the Laws of 1938, there will be required on all contracts entered into by any State Agency on and after July 1, 1938, a separate bond guaranteeing prompt payment of moneys due to all persons supplying the contractor, or sub-contractor, with labor and materials employed and used in carrying out the contract as follows:

(a) Whenever the total amount payable by the terms of the contract shall be not more than $500,000.00, the said bond shall be in a sum equal to the total amount payable by the terms of the contract.

(b) Whenever the total amount payable by the terms of the contract shall be more than $500,000.00 and not more than $1,000,000., the said bond shall be in the sum of one-half of the total amount payable by the terms of the contract.

(c) Whenever the total amount payable by the terms of the contract shall be more than $1,000,000.00 and not more than $5,000,000.00 the said bond shall be in the sum of forty per centum of the total amount payable by the terms of the contract.

(d) Whenever the total amount payable by the terms of the contract shall be more than $5,000,000.00 the said bond shall be in the sum of $2,500,000.00.

The amount of the certified check accompanying the proposal of the bidder to whom the contract is awarded will be returned when ten per centum of the work under the contract has been completed. If Surety Bond is dispensed with, in pursuance with the Highway Law, the amount of the bidding check will be returned when fifteen per centum of the contract work has been completed.

On contracts with federal funds, when optional types are permitted for any one item of work, contractors must state in the space provided in the proposal for this purpose the exact designation of the optional type upon which the proposal is predicated. No one proposal shall contain more than one bid for an optional item. The award, if made, will be on the basis of the responsible proposal which for all items of work gives the lowest total cost for the project and the contract will call for the type designated in such proposal.

Skilled, Intermediate Grade, and Unskilled Labor on all projects shall receive the minimum wage rate per hour as follows:

In New York City: Skilled Labor, ninety cents per hour; Intermediate Grade Labor, eighty-seven and one-half cents per hour; Unskilled Labor, eighty-seven and one-half cents per hour; in the Counties of Suffolk, Nassau, Westchester and Dutchess: Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, sixty-five cents per hour; Unskilled Labor, sixty-five cents per hour; in the Counties of Ulster and Orange: Skilled Labor, seventy-five cents per hour, and for Intermediate Grade and Unskilled Labor, sixty cents per hour; in Sullivan County: Skilled Labor, seventy-five cents per hour; Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, fifty cents per hour; and in all other counties, other than above, Skilled Labor, seventy-five cents per hour: Intermediate Grade Labor, fifty-five cents per hour; Unskilled Labor, forty-five cents per hour, unless shown otherwise in the itemized proposal.

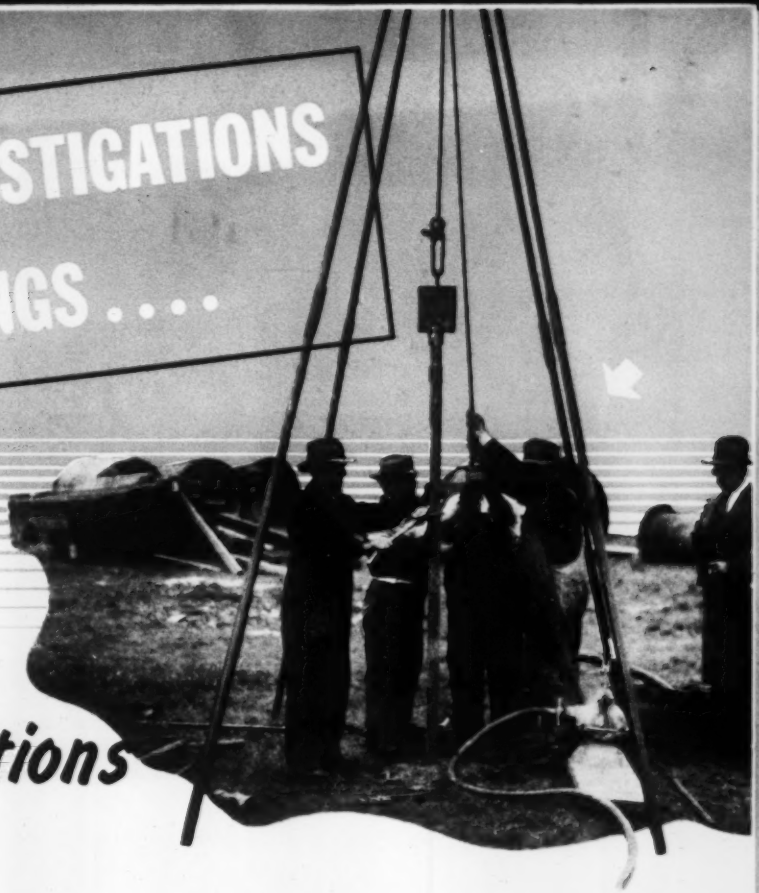
The minimum hourly rate of wages for the various types of operations and trades, as well as the hours of work and conditions of employment, shall be set forth under the Special Provisions in the itemized proposal for each project.

In conformity with the provisions of Section 220, Sub-division d of the State Labor Law, as amended, the minimum hourly rate of wages has been established and is annexed to and forms a part of the specifications for the project, and may be ascertained upon reference to the proposal for the project itself.

The right is reserved to reject any or all bids.

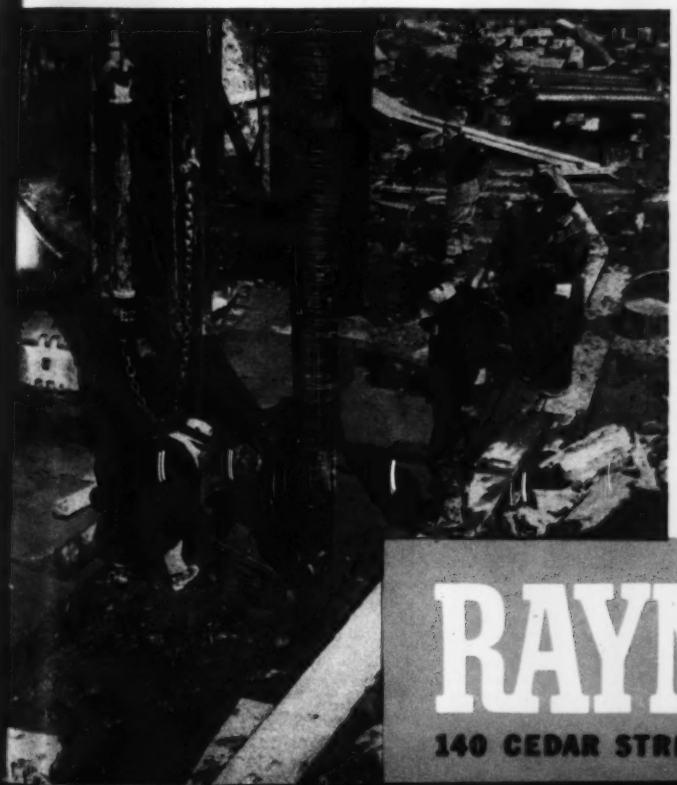
ARTHUR BRANDT
SUPT. OF PUBLIC WORKS

RAYMOND SOIL INVESTIGATIONS AND TEST BORINGS....



Get the Facts on Sub-Surface Conditions

Raymond supplies invaluable information about sub-surface conditions beneath a proposed construction site by two methods: 1 Driving a specially designed sample spoon into the earth through a guide casing and obtaining characteristic samples *in what is practically their actual existing* state, and 2 Boring through boulders, hardpan, etc., to locate elevation of rock and obtain cores thereof and recovering cored samples. The Raymond report includes a complete log of soils encountered, geological classifications, water levels and other pertinent information, including carefully preserved samples. ● Undisturbed soil samples of 3 to 5-inch diameter may also be obtained by Raymond boring methods for Laboratory analysis where bearing values and probable settlements need to be determined. Since a structure is only as good as its foundation, such preliminary investigations by experts are of extreme importance where foundations are deep or the project is of a large and permanent character. Your inquiries are invited.



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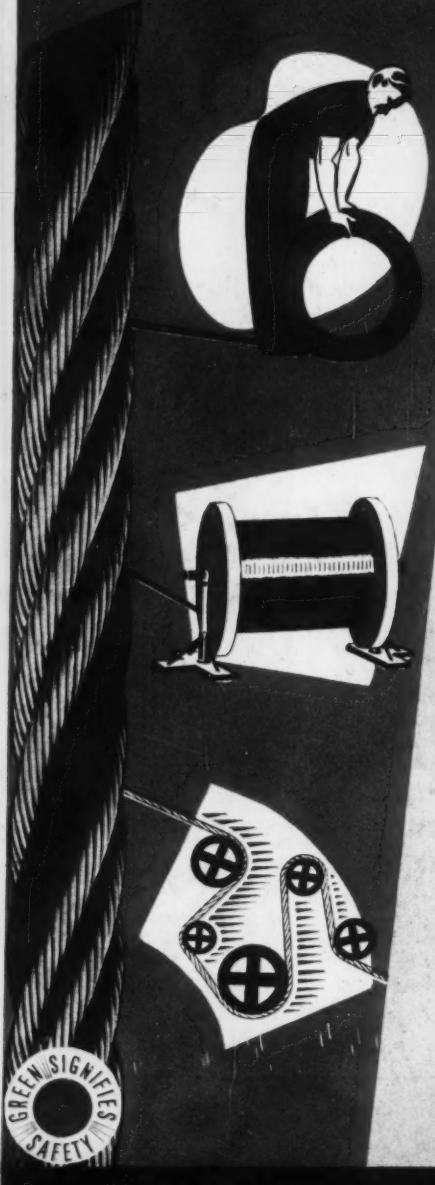

The service life of a wire rope begins at the start of the reeving job. Here are a few practical pointers to remember when reeving wire rope.

- If your rope is in a coil—don't pull the rope out of the coil. Roll the coil away from the rope end—allowing the rope to pay out in a straight line.

- If your rope is on a reel—align the reel with the drum and keep a constant tension on the spool to avoid slack in the line. Don't pass the rope around a lead sheave so small it will put a set or crimp in the rope.

- Wherever possible avoid reverse bends. In many installations, of course, reverse bends cannot be avoided. In such cases the life destroying effect of reverse bending can largely be nullified by the use of TRU-LAY Preformed Wire Rope. Because it is preformed, TRU-LAY possesses amazing resistance to bending fatigue and invariably gives far longer service.

- ***On any wire rope problem your nearest American Cable representative can help you.***

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